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OCTOBER • • 1946

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# PRODUCTS finishing

Volume 11 OCTOBER, 1946 Number 1

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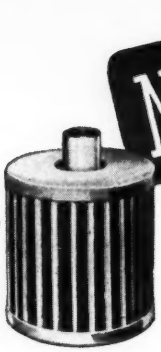


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Products Finishing

# Why Not Capitalize on Color?--

From time to time certain manufacturers have been known to state quite earnestly: "Why should I bother finishing my product. After all, who cares how pretty it looks as long as the mechanical operation is perfect? Besides, finishing my product is an extra expense from which I can see no return."

These, unfortunately, are businessmen who have failed to take cognizance of the buying public's taste. Regardless of what you call it, sales appeal is that feature in a piece of merchandise that attracts the prospective customer and ultimately leads to a purchase. It has been stated that the ingredients of sales appeal are line, color, and mechanical function. In consumer goods particularly, lines and color are the two factors which lead to the investigation of the third; namely, mechanical function.

We can logically answer the manufacturer who thinks of finishing as being dispensable or incidental to the operational efficiency of his product. The answer is that the prospective customer will never be aware of the "inside works" unless something calls his attention to it. Color gives impact. Color commands attention! The use of color finishing as that "extra something" has received a great deal of interest from engineering, selling, and merchandising departments. The proper choice of a color finish in many instances will do much to add to sales appeal and lower sales resistance.

Where metal parts are exposed to corrosive conditions, added resistance should be provided for color finishes by the use of various chemical pretreatments. Research has proven that the application of an organic finish directly over the bare metal is an inferior solution for the corrosion problem. This suggests that the surface of a metal should be made as impervious to corrosion as possible prior to the application of any finish. The manufacturer should make a comprehensive survey of the various finishing processes available and select a combination of processes that will offer the ultimate in protection and appearance. But why not capitalize on color in the selection of the modern Finish?

**OCTOBER, 1946** **Vol. 11, No. 1**

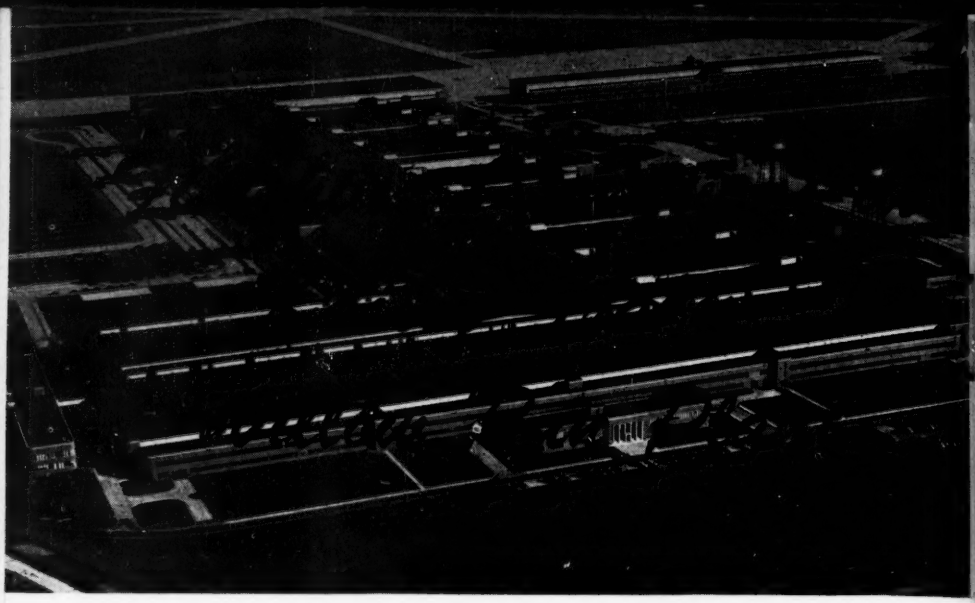

Fig. 1—Air view of the $100,000,000 Willow Run plant near Detroit, Michigan, where Kaiser and Frazer automobiles and Graham-Paige farm equipment are produced.

By BRYANT W. POCOCK

PRODUCTION lines at the huge Willow Run plant of Kaiser - Frazer Corporation and Graham - Paige Motors (Fig. 1) have been set up for the manufacture of Kaiser and Frazer cars (Figs. 2 and 3) with finishing operations performed at those stages of fabrication where they logically belong. These finishing operations include mechanical finishing, cleaning, Bonderizing and painting.

It is felt by Willow Run engineers that proprietary cleaners are of very definite value and that these must be considered in the overall question of possible sources for cleaning compounds. Consequently, specifications have been set up at Willow Run to cover proprietary cleaners, and a large group of them are tested simultaneously. These tests are followed by production trials, with the result that a few proprietary cleaners passing laboratory and production tests with the highest scores are listed as optional approved sources.

As a rule, synthetic organic types of emulsion cleaners are used, either alone or in combination with alkalis. These may consist of aqueous emulsions of synthetic chemicals with or without petroleum products, which when used properly, preferably with a power washer, remove both grease and solids. When used in a single-stage washer or when the cleaner is added in proper concentration to the rinse water, a residual thin film is deposited on the surface of the part, which effectually prevents subsequent oxidation and corrosion.

According to Mr. John T. Ott, Kaiser-Frazer's chief chemist at Willow Run, a good cleaner should exhibit 3 fundamental properties. First, it should reduce the surface tension of the solution so that the detergent film

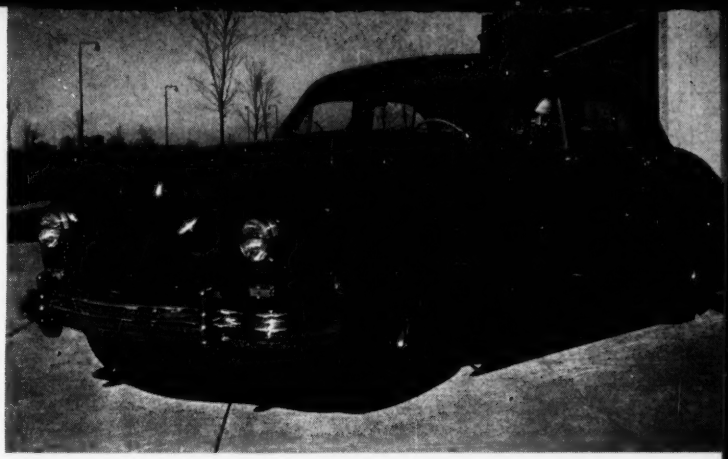

Fig. 2—H. C. McCaslin, vice president in charge of engineering of Kaiser-Frazer Corporation and Graham-Paige Motors, is shown behind the wheel of the first production model of the 1947 Frazer automobile.

●

can get under the dirt. Water has a surface tension of 72 dynes per centimeter. This should be reduced by the cleaner to about 35 or 40 dynes per centimeter. Secondly, a good cleaner should admit the possibility of separation of grease from the used solution. This property, contingent also upon proper design of the washing machine, is usually facilitated in practice by having a grease separation trough located near the top of the machine along one side, solid matter falling to the bottom of that side and being prevented from entering the other side, where the solution escapes via the pump, by a screen of proper mesh. Lastly, a good cleaner should remove smut. Smut may be a stain of solid atmospheric dirt, it may have been rubbed on the part, or it may consist mostly of abrasive material left on the part after polishing.

In the first operation in production at Kaiser-Frazer the car body is stamped and welded. It is then completely mechanically finished by buffing. The body is then ready to be Bonderized. Bonderizing is done in two mammoth 5-stage installations, one installation being for the Kaiser cars and the other for the Frazer. Each of the 5 stages of these two units consists of a 4-way spray system. Specifications for the stages are as follows:

1. Parco cleaner with Orthosil at 150 degrees F.
2. Water rinse at 140 degrees F.
3. Parker Spray Bonderite No. 100 at 135 degrees F.
4. Water rinse at 150 degrees F.
5. Parcolene chromic - phosphoric acid solution at 160 degrees F.

Bonderizing is followed by a blow-off operation and this by passage of the body through a short gas-fired oven at 150 degrees F. After transit through this oven and

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Fig. 3—The first production model of the 1947 Kaiser Special is inspected by Henry J. Kaiser, chairman of Kaiser-Frazer Corporation.

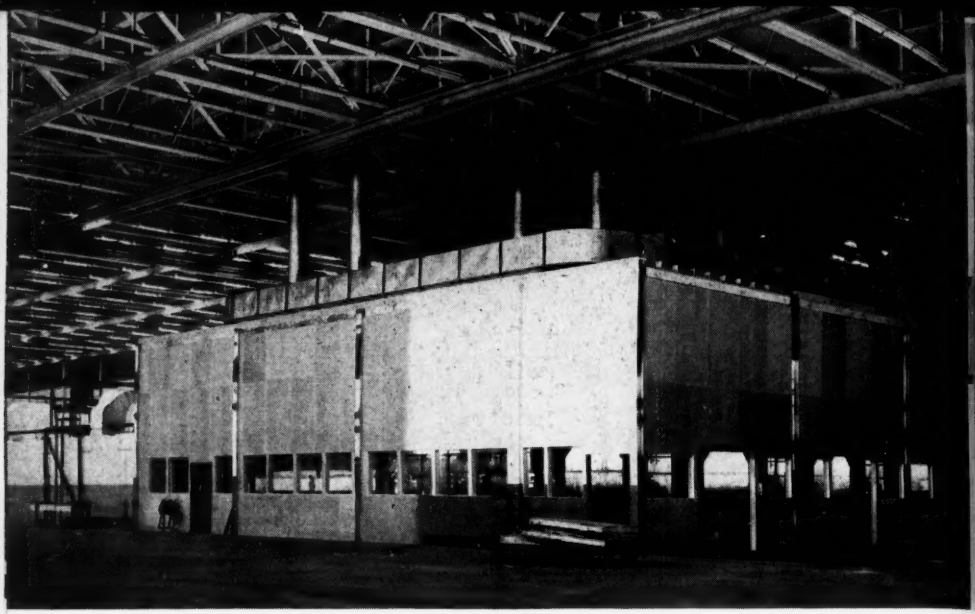


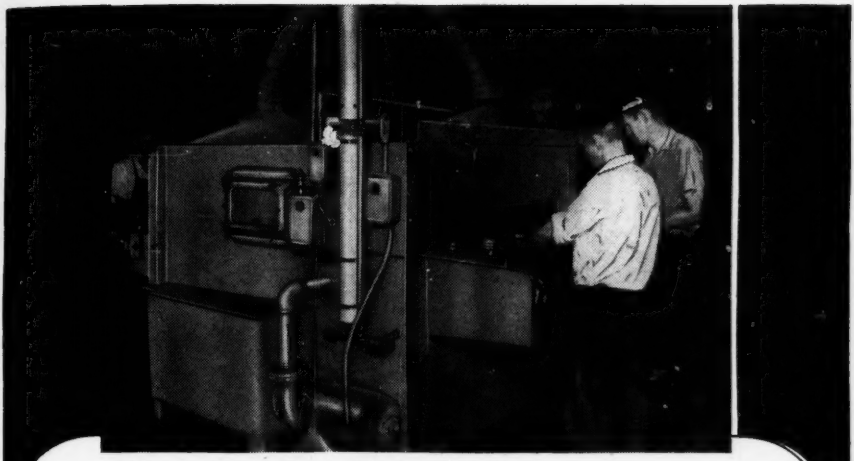
Fig. 4—Kaiser-Frazer's huge plenum chamber under construction at the Willow Run plant. Believed to be the largest ever built for such a purpose, the chamber houses four parallel production lines passing through criss-cross water-washed spray booths.

sufficient cooling, the underbody spray is applied in a water-washed type of spray booth, the operators being fully protected. The body is then ready to be glazed. In glazing, solder joints are knife filled with putty by hand.

Bodies are now transferred from body building trucks to body paint trucks. They are then conveyed to the primer line. The first operation in the primer line consists of application of a special, highly durable combination primer and surfacer in a criss-cross type of water-washed spray booth. Air suction in this booth is about 125 cubic feet of air per minute along the water wash. Bodies are then conveyed through a gas-fired baking oven 342 feet in length maintained at 325 degrees F. by Leeds and Northrup controls, passage taking 35 minutes. This installation includes one line for each make of car, and each of these lines is capable of turning out 45 bodies per hour.

After emerging from the 342-foot baking ovens, bodies are allowed to cool, after which Dolphin Paint Company's No. 3356 air and dust sealer is sprayed on all welded seams. Witco Chemical Company's body deadener is then sprayed on floor pans, under cowls, on doors and under trunk lids. Body paint trucks are now transferred from the two primer lines to a paint line arranged to accommodate the same trucks.

The first operation on the paint line is a water sanding operation in which Sundstrand mechanical air sanders are used in conjunction with water to smooth the entire body surface down as much as possible. This is followed by an automatic cold water spray to remove sludge. After passage through a small drying oven a varnish tack rag operation is performed, in which specially prepared straining cloth soaked in varnish and then dried is used by hand to remove all particles of lint, dust, and so on. Bodies then enter the first plenum chamber, shown in Fig. 4.



# Here's the Efficient way TO REMOVE GUMMY LUBRICANTS

This A-F Cleaning Unit is used to wash the sticky, gummy lubricant from stampings, which must be *thoro-cleaned* before assembly into other parts.

The stampings are carried through the Unit on an A-F Wire Mesh Conveyor. This type of conveyor permits the powerful A-F Super-Spray System to wash *all four sides* of the stampings at the same time. Every inch of surface is thoro-cleaned quickly, efficiently, economically!

If you make metal parts or products, you have a cleaning and finishing problem. Why not discuss it with A-F Cleaning and Finishing Engineers? If one of our standard units will not do the job, remember that A-F Engineers are specialists in custom-built equipment that insures faster production and higher product quality at lowest cost. Write today.

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CONVEYING MACHINERY A-F

**Alvey-Ferguson**

This plenum chamber is a large room containing a criss-cross type water-washed spray booth plus space for an appropriate flow time interval. This room, although not sealed, is maintained at between 75 and 80 degrees F. by the introduction of 180,000 cubic feet of warm, filtered fresh air per minute. The chamber is so designed that only 160,000 cubic feet of air can escape from it per minute until a light static air pressure has been built up to produce an equilibrium which has the effect of making it impossible for air to enter the chamber except through the main supply. Since this supply is filtered, no dust can enter the chamber. The plenum includes 4 parallel production lines, wherein a sealer coat is sprayed on the bodies, this being the same for all bodies irrespective of color. The entire operation has the effect of producing and helping maintain a luster as a base for subsequent color coats.

After emerging from the large plenum chamber, bodies are conveyed through gas-fired drying ovens at 275 degrees F. for 35 minutes. After cooling, they undergo a mechanical sanding or "scuff" operation, which consists of a very fine hand sanding for the purpose of removing any high spots. This operation must be performed very skilfully and very lightly, and calls for the exercise of a high degree of artisanship on the part of the operator.

Hand sanding is followed by a cold water rinse to remove sludge, and this by passage of the work through a short drying oven. A second varnish tack ragging operation is now performed, after which the bodies are ready for the color booths.

Figure 5 shows Kaiser-Frazer's centrally located paint mixing depart-

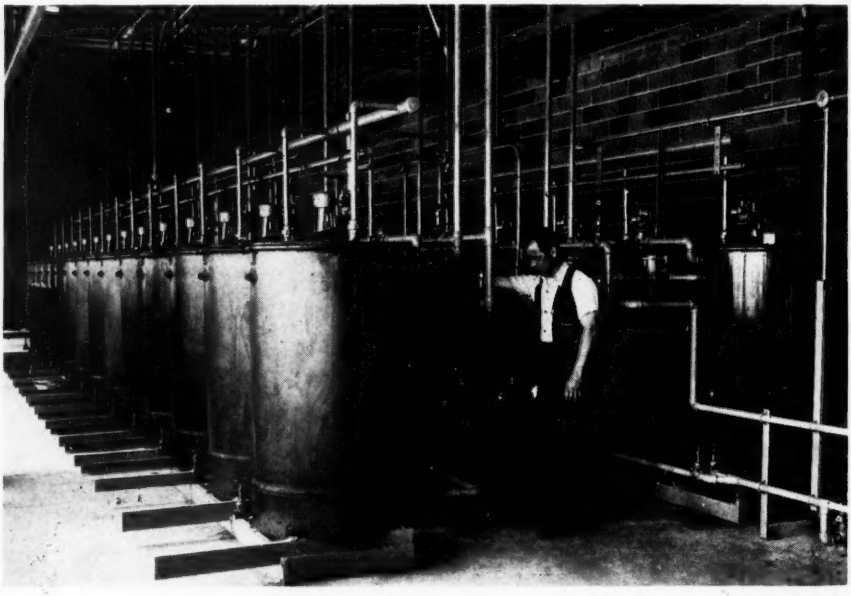
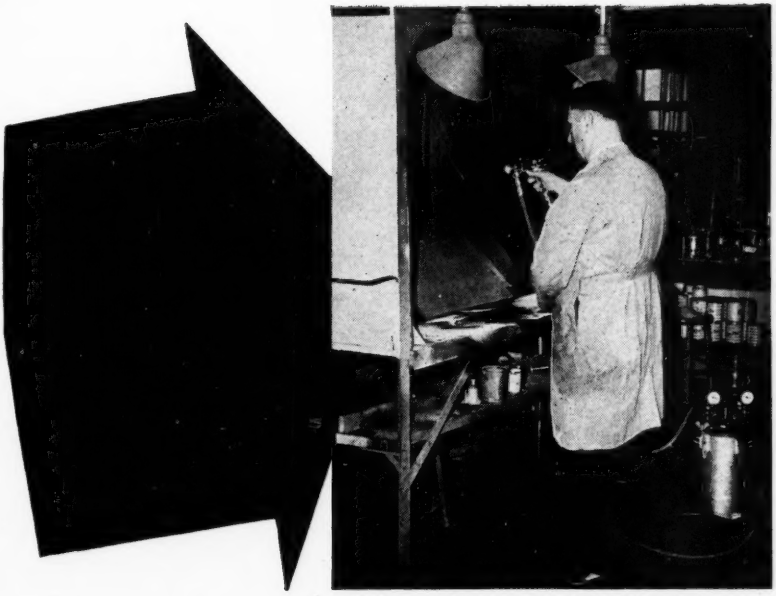


Fig. 5—View of paint mixing department at Kaiser-Frazer's Willow Run plant showing parallel rows of mixing and pumping tanks. Paint mixed in this department is pumped under pressure to every spray booth in the plant where these paints are used.



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No matter what the material being applied, you get certain advantages with Eclipse Low Pressure Spray Equipment. Savings in time, power and material are especially noticeable in high solids application.

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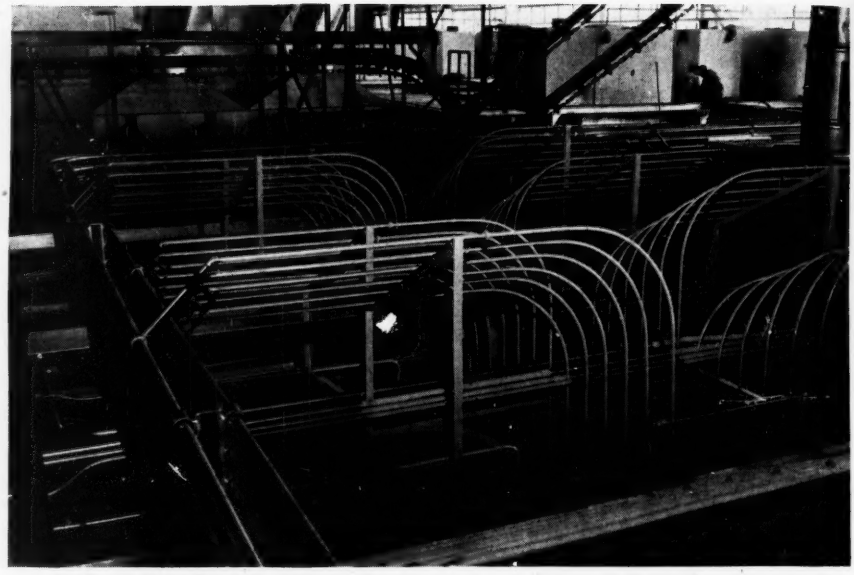

Fig. 6—Futuristic effect of rows of parallel exist and return paint lines leading from paint mixing department to various spray booths at Willow Run

ment, where all paint is mixed for the entire plant. In all, 12 different colors are involved, plus one for the underbody and one for the primer-surfacer combination. Seen in the illustration are two parallel rows of 120-gallon paint mixing tanks, 14 tanks in each row. Each tank in one row is located opposite a tank in the other row which is used for the same paint. Piping is arranged so that either one of a pair of tanks can be used for mixing while the other is being used for pumping.

While paint is being mixed in one tank, paint from the opposite tank is being pumped through pipes to every spray gun in the Willow Run plant where this particular paint is to be used. Non-sparking aluminum paddles are employed in the mixing tanks, arranged in double sets of 2-bladed paddles. All electrical equipment associated with the entire paint mixing department is fully enclosed, and only explosion-proof motors are used. All colors are coded by number, the 14 exit and 14 return pipes being painted green.

As shown in Figs. 6 and 7, a very pleasing and somewhat futuristic effect is produced as a result of these paint supply lines winding together on their way to and from the various spray booths in the plant. This effect in combination with that produced by the aluminum and green interior decorating scheme used at Willow Run has resulted in such a pronounced aesthetic appeal that absenteeism has dropped to a very low level. It would appear that employees in general are highly appreciative of the aesthetic influences of their surroundings.

The color booths are not criss-cross. They are of the down-draft tunnel type, water washed, with excess spray being sucked down through floor vents. The operators are staggered in

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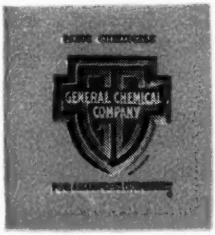


For technical data . . . trial samples . . . or other helpful information on this product, contact General Chemical Company Fluorine Division, 40 Rector Street, New York 6, N. Y. or the nearest General Chemical Sales and Technical Service Office.

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position. All 12 colors are available in these booths, plus a single air line at 100 pounds per square inch pressure, equipped with a water and oil extractor. One gun is kept permanently hosed to each color line, snap-off connections being available to the air line. Color coats are followed by suitable flow time space, this space and the color booths making up the interior of a second plenum chamber.

Coloring is followed by a 35-minute passage of the work through a drying oven at 275 degrees F. Taping operations are now performed in order to mask off parts for any specified two-tone coloring, which follows immediately on those bodies calling for two-toning. In the two-tone booth, uppers are sprayed on bodies previously colored only on lower parts. This is followed by passage of bodies through the two-tone drying oven for drying uppers, and then by paint inspection. After inspection, bodies are transferred to the trim line where trim is installed.

Kaiser and Frazer automobile wheels are sprayed in an automatic wheel spraying machine equipped to spray from 800 to 900 wheels per hour. Chassis are sprayed in a criss-cross water-washed spray booth and dried in an A-type steam-heated oven as shown in Fig. 8, held at 180 degrees F. These installations will handle about 45 chassis per hour. Fenders, hoods, stone deflectors and radiator grills are processed on their own paint lines, which incorporate essentially the same details as the body paint lines.

All finishing operations at Kaiser-Frazer are either directly or indirectly subject to control by the laboratory. Plans for a new laboratory at Willow Run include 15,000 square feet of floor space on the first floor and 9,000 on the second floor. The laboratory will be subdivided into departments or units, those on the first floor includ-

Fig. 7—Futuristic effect of monorail system and paint pressure lines at Kaiser-Frazer's Willow Run plant

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*for the surface treatment of metals*

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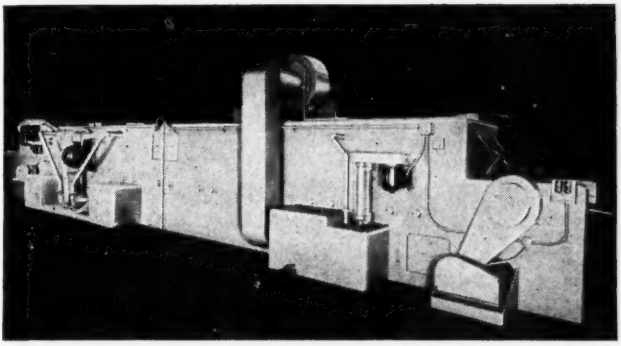
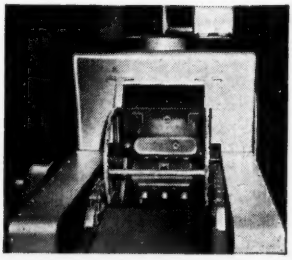
## THIS MACHINE CLEANS THEM ALL

The machine shown is cleaning large parts—air compressors—and small parts used in the compressors. All parts flow thru the automatic, continuous operation which



**WASHES, RINSES, DRIES AND RUST-INHIBITS**
**so that every part is ready for assembly or storage.**



RANSOHOFF FIELD ENGINEERS will see you gladly, in your own plant.

Bodies are clamped into fixtures which roll thru the machine on tracks. Fixture shafts engage dogs on parallel chains. Driving mechanism operates with time and limit switches so that the work dwells under the sprays while rotating. Component parts pass through in wire mesh trays.

***It's economical cleaning at its best!***

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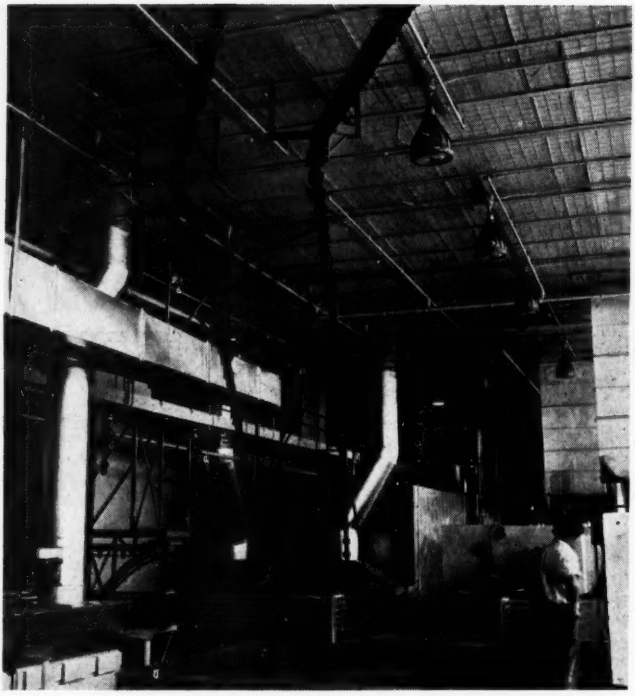


Fig. 8—Monorail conveyor and baking ovens at Kaiser-Frazer's Willow Run plant

ing departments for physical testing and stress analysis, metallographic analysis, heat treat research, miscellaneous testing, experimental electroplating, X-ray analysis, instrumentation and sample preparation, and stock storage and service; while the units on the second floor will comprise those for the spectograph, stock and service, general chemical analysis, control and research; lubrication control and research, rubber and plastics control and research, corrosion investigation, and offices.

## "Troxide" Removes Rust from Steel Floor

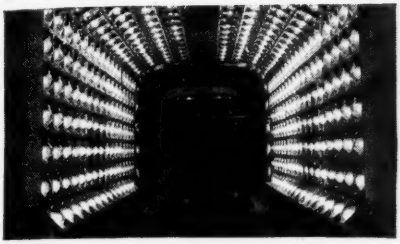
ACCORDING to a recent report, an interesting use for "Troxide" pickling agent, product of Waverly Petroleum Products Co., Philadelphia, is the removal of rust from steel floors.

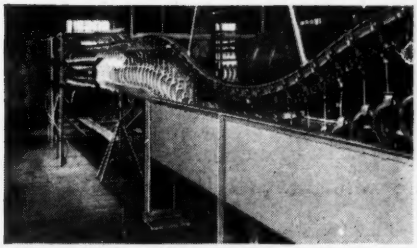
At the Proctor & Gamble Co., St. Louis, one department had been shut down for five years with the result that the steel floor became very rusty. A gallon of standard Troxide solution was mixed and applied to the floor with a mop. The solution was allowed to remain on the floor until it started to dry, at which time it was mopped up. During this operation, all rust was removed, with the floor taking on a new appearance. Following this, the floor was dried with a second mop and gone over again with an oil mop to prevent rerusting.

---

**"Crystal Finishes."** The treatment of rough, non-porous surfaces with black or clear crystals for a sparkling effect is outlined in a four-page bulletin now being offered by the Hilo Varnish Corp., 60 Stewart Ave., Brooklyn 6, N. Y. Copy of Bulletin No. 8 free upon request.

# On truck bodies





*Photos courtesy Fostoria Pressed Steel Corporation, Manufacturers of Infra-Red Equipment*

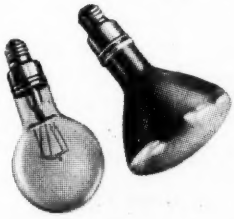
# or metal parts

# *INFRA-RED* saves hours in finishing time

On large jobs or small—on clear lacquers, varnishes, wrinkle finishes—you can save time, cost and space in the drying process by the use of Infra-Red.

Equally important: you can get better, more uniform results—higher standards of workmanship, fewer rejects. Operation is visible at all times when you use Infra-Red—allowing *continuous* inspection if desired.

## *FOR BEST RESULTS WITH INFRA-RED*



come to the company that's first in the field! Wabash developed the special tungsten filament that provides *uniform* distribution of radiant energy—at the best wave lengths for the purpose. Wabash locks every lamp with the famous "Superlok" base, which even the most terrific tunnel temperatures cannot loosen.

And Wabash is ready to help you engineer each job. *Wabash Corporation, 345 Carroll Street, Brooklyn 31, N. Y.*

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FIRST IN INFRA-RED

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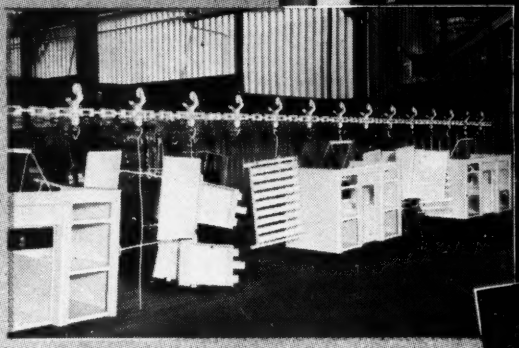
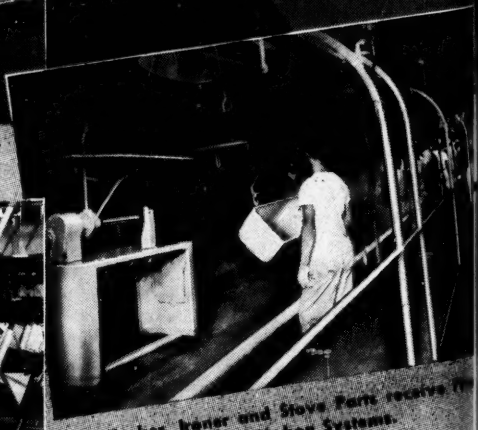
# COMPLE



Kitchen Cabinets Finished in a Mahon System at Acme Metal Products, Blue Island, Illinois.



Washer, Ironer and Stove Parts receive [illegible] Enamel Finish in Mahon Systems.

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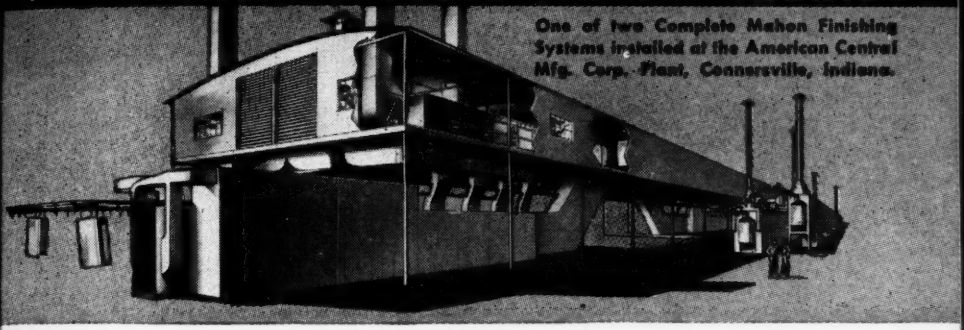

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MAHON

# GI Trainees Learn Plating and Finishing

*The author discusses the successful operation of a Veteran's Administration approved plan for teaching plating and finishing methods to discharged veterans.*

By PAUL B. NEES

CAN the average plating and finishing concern benefit from cooperation with the government-sponsored GI training program? The answer to this question is yes, whether the plating and finishing concern has one or many trainees, according to the Gate City Plating Works, 2307 Grand Avenue, Kansas City, Missouri. J. J. Kirk and J. L. Baar, owners of this medium sized company, have worked out a comprehensive training program for discharged veterans that is said to be the first of its sort for the industry. The plan has not only received the approval of the Veteran's Administration but has been adopted as a model for similar setups elsewhere.

Although receiving no direct monetary benefit, the established plan is said to enable the company to obtain a better class of trainees than they might expect to attract as regular apprentices. For the ex-serviceman who chooses the plating industry

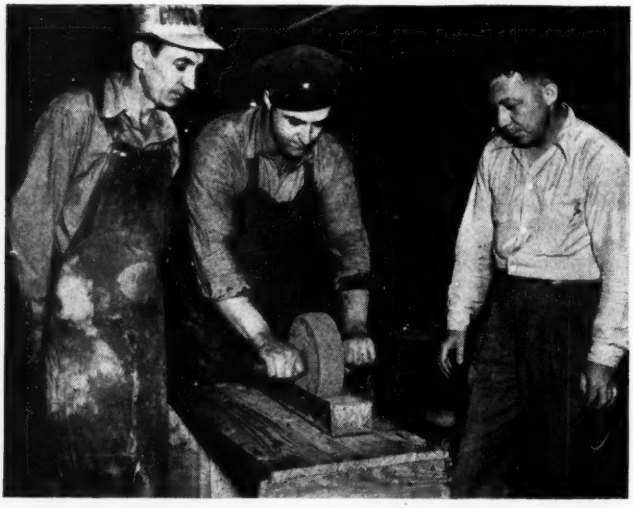


Fig. 1—Walace Shellty, a GI trainee, receives instruction on setting up polishing wheel from Jake Korsci, polishing foreman (left). Joe L. Baar (right), member of the firm, looks on.

Fig. 2—Trainee Shellty tries his hand at the polishing lathe.

for his vocation, the arrangement not only assures him full training in all the skills of the trade but sets his wage at that of a journeyman plater from the beginning of his apprenticeship.

To ensure proper aptitude of those desiring to enter training, applications are carefully screened both by the Veteran's Administration and by the Gate City Plating Works. Only those who meet the requirements of both are accepted for training. When accepted, the company pays the trainee the regular established wage for an apprentice, while the Veteran's Administration allots him the difference between this wage and that established for journeymen.

The training period covers three years and is planned so that by the end of that time the trainee will have acquired knowledge of all the standard processes of cleaning, plating, and finishing. Constant demonstration and supervision in the early part of the training is gradually tapered off so that before completion the trainee gains confidence from standing largely on his own merits.

The Gate City company does no precision plating but specializes in standard plating of chromium, nickel, copper, brass, and silver on new products of numerous small manufacturers, as well as refinishing old articles with these platings. The GI program is confined to these five standard plating processes.

As the first phase of his instruction, the trainee is taught to distinguish the different kinds of metals. Metallic structures are explained to him and he is shown the proper grade of emery to use in the rough grind of a metal prior to plating. Then, when he has learned the correct grade of emery to use, he must learn how to set up the grinding wheel. When this process has been mastered, the trainee is instructed very carefully in the operation of the lathe. He must know the machine thoroughly, and as the final step in the rough grind category he must know how to handle himself in the operation of the lathe. Every effort is made to see that the unskilled man acquires the fundamental touch and skill necessary for his own safety and for good work. From the beginning of this first stage, the trainee is constantly impressed with the fact that good plating depends on proper preparation of the article to be plated.

After the trainee becomes familiar with lathe operation and proficient in the preliminary rough grind proce-

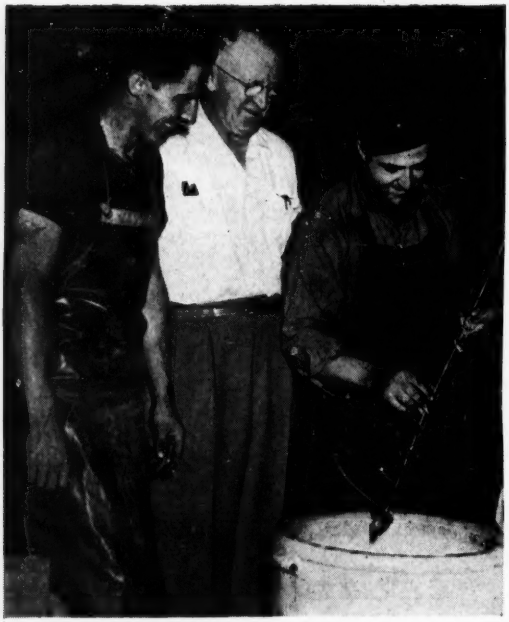


Fig. 3—Here the trainee receives instruction on the acid bath from Paul Sarrett, plating foreman (left), while J. J. Kirk of the firm (center) looks on.

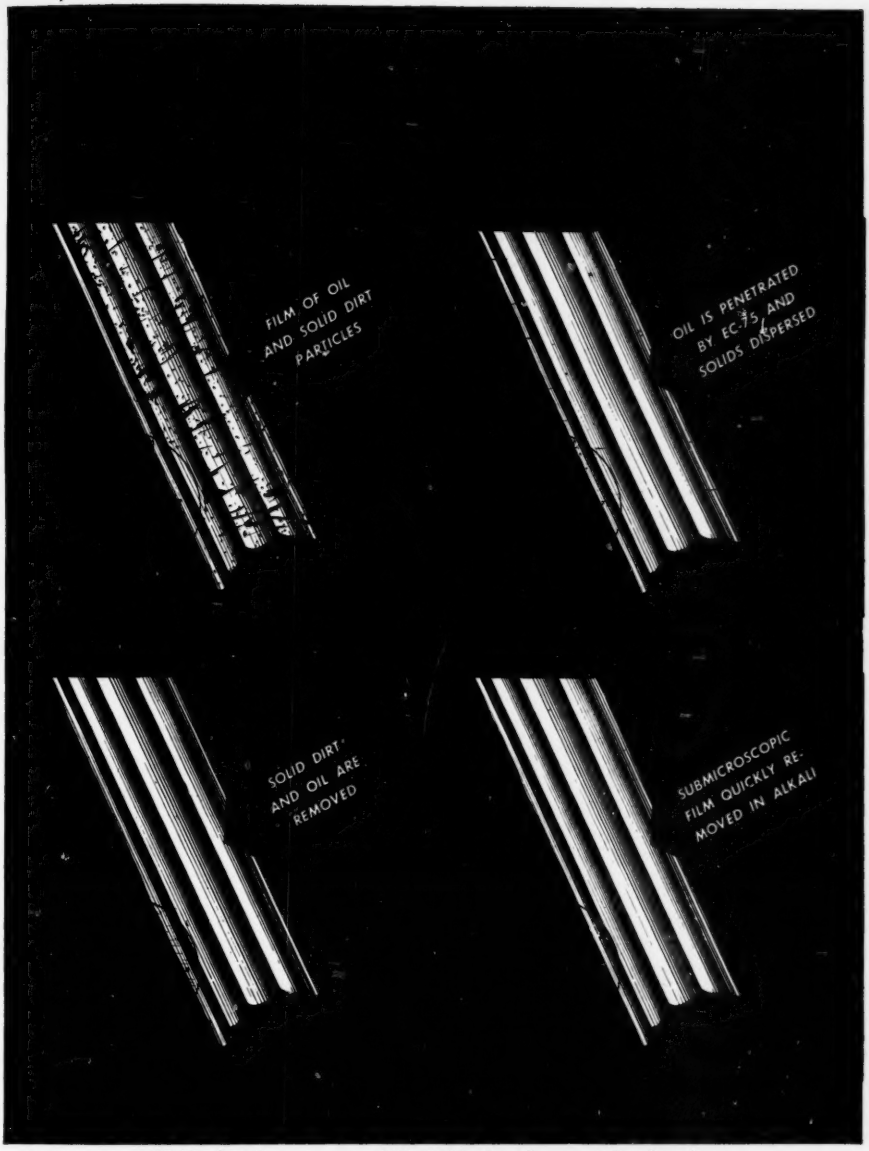
dure, he is advanced to the second stage of training, namely, polishing. He is first taught the various polishing compounds and then instructed in the suitable ones to use for each metal. He is made to realize that choosing the correct compound for a metal not only assures a better polishing job but also often means a considerable saving in cost.

After the trainee has learned compounds he is taught the use of the grease stick. Next he learns to set up his wheel for the finish polish before final plating as shown in Fig. 1. In the polishing operation, as illustrated by Fig. 2, he is more than ever instructed and watched to see that he constantly studies and inspects his work to keep the surface to be plated clean and free from all impurities and extraneous matter that might impair the quality of the plate.

At this stage in the program trainees are rotated between the polishing wheel and the plating department. In the plating department the first principle taught is, "be sure that all articles are absolutely clean." With this made certain, the trainee must next determine from the order the operation to be done and how it is to proceed. For instance, for chrome plating he has to understand the need and the why and wherefore of the undercoating of nickel that is to be applied. He must learn the proper pickles and rinses for each stage of the plating process. How long to leave the article in each tank and, where there is more than one plate, how to prepare the original for the final one are other points to be learned. Figure 3 shows a trainee being instructed in the function of an acid pickling bath for small parts.

Not the least important knowledge to be absorbed at this stage is how to set up the plating racks for the different kinds of plate and for different types of articles, as shown in Fig. 9, so that plating will be uniform and make most efficient use of the current, solution, and equipment. The vital importance of perfect electrical connections for obtaining good results in electroplating is stressed by the instructors.

During this phase, as he learns the routine of the plating process, the trainee is still working under constant supervision. By the end of the phase he must know the operations for


FILM OF OIL AND SOLID DIRT PARTICLES
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*Metal Finishing Chemicals and Equipment*

chrome, nickel, brass, copper, and silver plate. This knowledge must include the proper solutions to use for each step in each type of plating, the time in each tank, correct rinses, and any buffing that may be required between steps.

After the trainee has learned the mechanics of the plating process, the next step of his instruction covers the dynamics and chemistry of the operation. He is now taught to use hydrometers and testers of various sorts. Resistance boards and voltage and current instruments come to have a meaning for him.

The various salts and chemicals must now be learned, as well as how to mix solutions from them and how to keep these solutions up to proper strength during the plating process. Variance in results obtained from different plating solutions is demonstrated. The trainee's instruction covers methods of chemically testing solutions to determine contents and strength.

Not until he has learned in detail the five plating processes and how to plate any kind of metal is the trainee considered proficient in this phase of his training. There is much information to be absorbed here and many stumbling blocks but GIs who had technical training in the armed services often show especial aptitude for tackling the problems of the plating industry.

As the trainee masters the intricacies of the many plating operations, he is finally instructed in finish polishing. Again he must learn how to set up his lathe properly to do this job. He must learn what type of buff to use on a job after it is plated. It becomes necessary for him to know buffing compounds, how to use them and in what quantities, and the results to be obtained from each. The wide variety of plating jobs handled by the Gate City Plating Works require so many different types of buffs that a great deal of training is necessary before a man is able to select the proper one to finish a job.

At this stage the trainee also has to learn what sort of finish to give each article. The problems here are far more complicated than is the case on an assembly line turning out the same part continuously. In this shop, the type of article is constantly changing and the jobs turned out daily run the gamut of the plating scale.

Few of the jobs are processed through the shop with

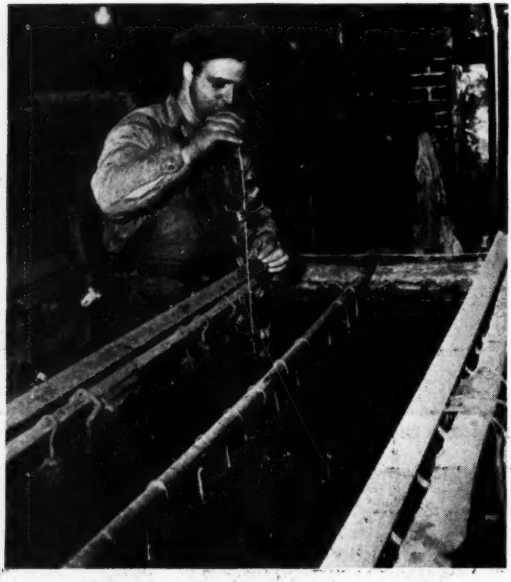

Fig. 4—At this stage the trainee is shown giving racked work a final check prior to immersing it in a nickel plating bath.

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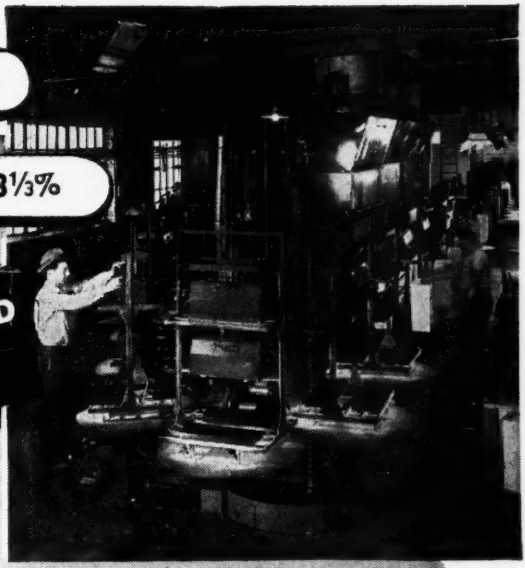
**WITH G-W INFRA-RED SYSTEM**



When a G-W Infra-Red System replaced older methods in a large Philadelphia metal specialties plant, rejects went down 35%, power costs were cut ⅓, paint room space was reduced 50%.

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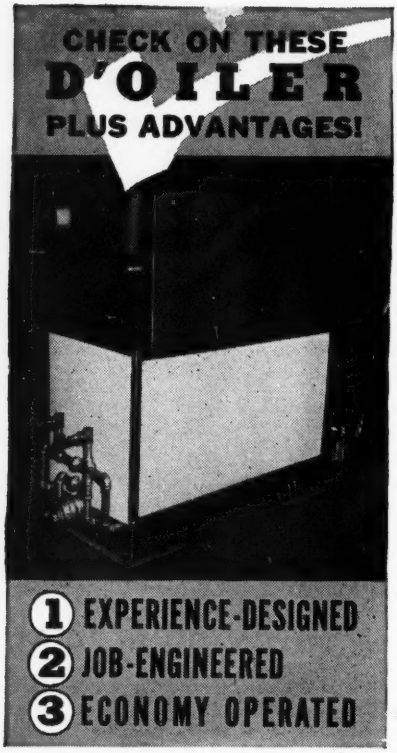


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specifications attached, thus it is up to the trainee to learn through experience the standard finishing practice on every sort of job. He must acquire knowledge of which articles are to be polished and which are not. He must learn when to give a gloss finish and when a satin. When two finishes are to be combined on one job, as is often the case, he must know how to make the proper combination.

In this phase of his training it is all important that the trainee acquire a touch or feel of his own so that his buffing pressure will polish without causing unnecessary wear on the plating. Even after his considerable experience on grinding and polishing lathes, that just right touch with the buffer is hard for some trainees to acquire.

As the three-year training period approaches an end, the trainees will be placed more and more on their own so that by the end of the program they will be able to take in hand any metal and carry it through all the processes of standard plating. They will be qualied in every way for their journeyman's cards.

Gate City Plating Works is enthusiastic over the interest and progress shown by their present trainees, and the latter are attacking vigorously the problems posed by their chosen vocation. The high caliber of the trainees which the company is able to obtain and the attractive financial arrangements for these young men make a setup that is mutually satisfactory. It's a plan that should work elsewhere just as well as in Kansas City. Those readers of PRODUCTS FINISHING who might be interested in starting an "On the Job" training program may obtain a mimeographed outline of the procedure by writing directly to Mr. J. L. Baar, Gate City Plating Works, 2307 Grand Avenue, Kansas City, Missouri.

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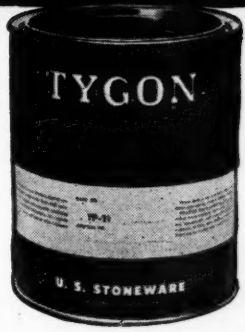


Tygon Plastic Coatings are available in white, black, clear, gray, green, red, or aluminum. Would you like a generous free sample for your own tests? A note on your letterhead will bring it promptly.

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# Finishing Clinic

## Flame Priming Offers a Method of Preparing Steel Surfaces for Painting

By DR. ALLEN G. GRAY

•

A Monthly Digest on Current Technical Progress Indicating Significant Trends and Developments in the Finishing Industry

•

*THIS MONTH... Flame Priming Offers a Method of Preparing Steel Surfaces for Painting . . . Vinyl Resin Finishes Due for Expansion . . . Liquid Polishing and Buffing Compounds May Offer Advantages... Soft Water Rinse Improves Aluminum Finishes ... Micro-Barrel Plater Proves Useful in Many Finishing Operations . . . New Methods for Hot-Dip Tinning of Cast Iron.*

DURING the past few years a great deal of interest has been evidenced among structural steel fabricators and finishers in the development of methods of preparing steel surfaces for painting. Research into the protection of steel surfaces by painting has indicated that the preparation of the surface is equally as important as the painting itself. The surface in addition to being cleaned of loose scale, rust, and contaminants should also be dry and warm, because it has been shown that even a single molecular layer of moisture or some other incompatible material on the surface will not only prevent satisfactory bonding of the base coat but will permit corrosion to continue after the coat has been applied. On a warm dry surface, the paint will flow readily, continuously wetting the entire surface and carrying the inhibitors into intimate contact with the surface where needed for effectiveness.

While the beneficial effects of painting on a clean, warm and dry surface have long been realized, according to R. J. Anderson in a paper presented before the Saguenay Branch of the Engineering Institute of Canada, it was not until the oxyacetylene flame-priming process was introduced, several years ago, that all three of these desired conditions could be achieved. Following its introduction, flame priming has proved its efficiency, speed and economy in theory and practice, as evidenced by the fact that well over 20,000,000 square feet

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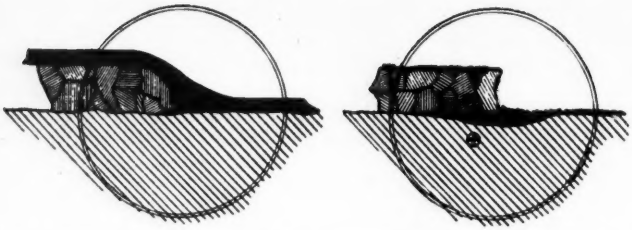

This illustration shows one action of mill scale on steel. The figure at the left shows a section of steel that has been flame-primed and painted. The figure at the right depicts the electrolytic action that occurs between oxide and iron.

of steel surfaces are now being treated by this process each month (also see "Engineering Journal" (Can.) 28, 707-12, 1945).

The flame-priming process consists of "scrubbing" steel surfaces with a series of closely spaced oxyacetylene flames that have an extremely high temperature and high velocity. As a result, all mill scale that is not tightly bonded is popped loose by sudden thermal expansion, and physically absorbed and chemically combined water is driven off from any rust that is present, leaving stable oxides in their place. At the same time, other contaminants, such as oil and acid salts, are consumed or disintegrated by the flames. The surface is then swept or wiped free of loosened foreign material, and painted while still at an elevated temperature.

This procedure, it is reported, not only brings about improved corrosion resistance of the paint coating, but also increases cleaning and painting rates and reduces setting time for the paint. As a further advantage, painting can be carried out under conditions of low ambient temperature or dampness which would otherwise cause major delays. The time saving with the process is of particular importance when continuous production without delays in the fabrication and painting of steel is required.

The heating action in flame-priming is produced by flame-priming heads ranging in widths from 1 to 12 inches, which can easily be attached to standard welding blowpipes, either directly or by means of an extension arm. The entire unit is light, well balanced, and easy to handle. The head is protected from wear or damage in use by means of hard-faced wear pads and skids, which also serve to keep it automatically at the correct distance from the work. A 6-inch head, the size most frequently used, has 49 flame ports that are spaced ⅛ inch apart, and are No. 75 drill size, or approximately 20 thousandths of an inch in diameter. Despite this extremely small diameter, the flames are over ¼ inch long, indicating the extremely high velocity of the burning gas jets, which increases the "blasting" effect of the flames and therefore their efficiency.

Due to the high velocity of the flames and the design of the flame ports, these flames are extremely resistant to popping or clogging under the most severe operating conditions. The technique of manipulating the blowpipe is easily learned and requires no special skill. It has been reported that painters with no previous experience in using the oxyacetylene process, have been trained in five minutes to do flame-priming satisfactorily.

It is reported that practically any metal surface which is to be painted can profitably be flame-primed so as to improve the quality, corrosion resistance, and life of the paint coat. The process is being used to an ever increasing extent for this purpose, for such important applications as structural steelwork, storage tanks, dams, locks, pilings, railroad cars, ship hulls and deck plates, steelwork in subway

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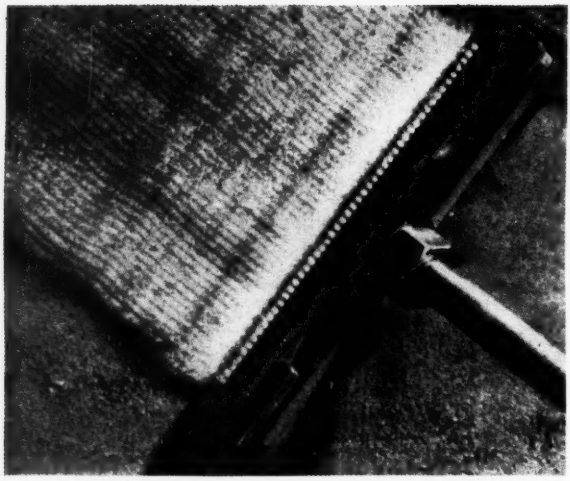
# DU PONT SOLVENTS



The dark streaks that appear on the plate surface shown being flame-primed herein are black magnetite and the silvery streaks between them are sponge iron. Both are granulated products of rust that can be easily swept off the surface.
*(Photo courtesy "Engineering Journal")*

construction, plane hangers, and pipe lines.

The process also finds increasing application in the reconditioning of previously painted surfaces that have become badly corroded and pitted, particularly industrial structures subjected to highly corrosive conditions. The action of the flames pops the heavy rust loose, even in deep pits, and drives off any chemical salts, acids or gases that may be clinging to the surface. Materials, such as pipe that has been underground, are freed of mud and moisture simultaneously. The finishing engineer may have certain applications which will warrant a consideration of this method of surface preparation.

* * *

## Vinyl Resin Finishes Due for Expansion

THE finishing engineer should keep in mind the fact that the tremendous expansion of the vinyl resin production cannot help but have a profound effect on the coatings industry as a whole. According to Richard W. Quarles of the Mellon Institute of Industrial Research, in a paper recently presented to the Paint and Varnish Production Club, Toronto, if for no other reason than the increased availability and the decreasing prices, the vinyl resins will have a wider use and will expand many of the prewar markets.

The most important of the vinyl resins are the copolymers of vinyl chloride and vinyl acetate which are available in a number of grades of importance to the coatings industry. Many technicians in the coatings industry are familiar with these resins under the so-called "Vinylite" brand. These resins, as reported by Quarles, are permanently thermoplastic, neutral, and non-oxidizing, and, in solution applications, they dry by the evaporation of solvents only. Before the war, they found many uses in the food packing field because of their freedom from odor, taste, and toxicity. Their low water absorption, combined with phenomenal resistance to inorganic acids, alkalies, and corrosive chemicals, led to many applications in the field of special protective finishes. The toughness and flexibility permitted coated metal objects to be spun, crimped, and fabricated to an unusual extent. In general, the vinyl finishes are not softened by gasoline, by greases, or by alcohol. They are flameproof and have satisfactory chemical properties

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ALPO Finishes are ideal for modern designed household and office appliances and numerous other articles of metal and plastic.

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(also see "Can. Chem. & Process Ind.," April, 1946).

The general field of industrial finishes can be counted on to absorb a fairly large quantity of resins. Already, it is reported, that "Vinylite" resins are recognized as an ideal finish for concrete, cement board, and the like because of their excellent alkali resistance. The field will be expanded to include many industrial maintenance finishes made possible by the air-drying properties of certain of the resin formulations. Abrasion-resistant finishes should be very important fields for future development. Cash registers, time clocks, and elevator doors are a few of the cases where finishes are continually subject to excessive wear and where vinyl resin finishes have been reported to provide consistently long wear. Aircraft finishes with excellent resistance to cold checking, sand abrasion, and chemical corrosion will offer another promising field. The hazards of fire from surface coatings on shipboard was serious during the war and more attention is being paid to the nonflammability of coatings.

Probably the most significant development in the vinyl resin finish field, according to Quarles, will be the trend to more insoluble, tougher, and more resistant grades of the resins. This will be brought about by the development of dispersions instead of solutions for applying the resins, and the cost of application is predicted to be but a fraction of that required for solutions. Also, it is reported, that savings in application costs, due to the possibility of heavier coats, is very substantial.

The development of colorful elastomeric plastics has been one of the fascinating advances in the resin field during the last few years, and there

SIZE
IS NO OBJECT

With Blakeslee Degreasers you can easily clean the inside of tubing up to 40 feet long with an inside diameter as small as 1/8 inch; or precision parts of delicate instruments and watches . . . Cleaning time can be cut as much as 90% and hand scrubbing eliminated . . . The Blakeslee method automatically cleans all surfaces, even in the pores of the metal.

*Write for free informative booklet*

BLAKESLEE
Solvent Vapor DEGREASERS
Metal Parts WASHERS

STANDARD AND SPECIALS
Engineered for you

G. S. BLAKESLEE & CO., CICERO STATION, CHICAGO 50, ILL.
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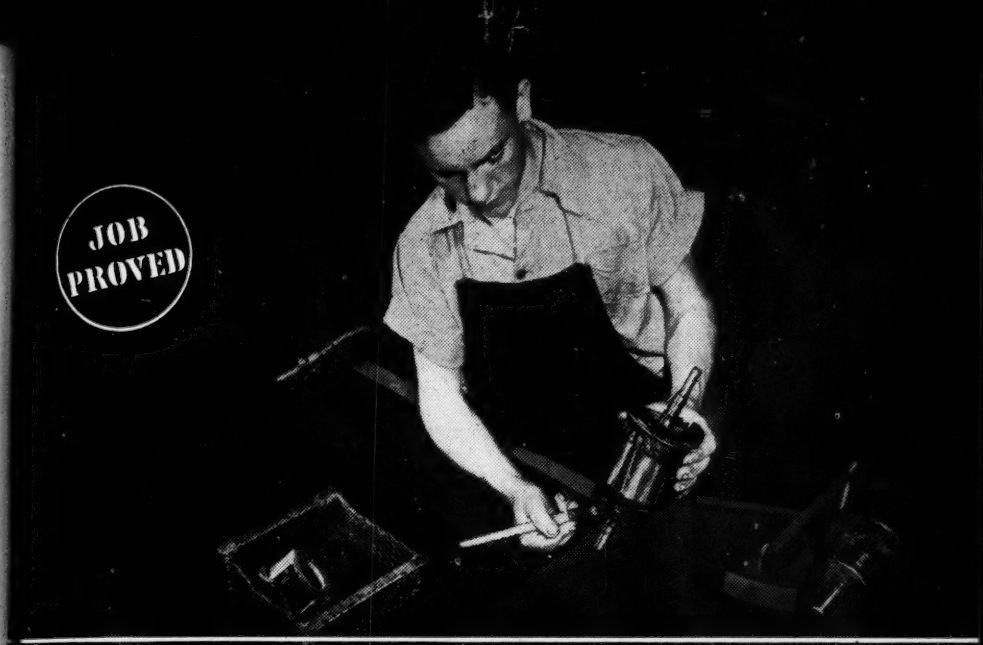


# CLEAN-UP MAN *Saves Time* AND MONEY

## SUN SPIRITS . . . Replaces Three Other Cleaners,

### Costs Less, Cleans Better, Lasts 4 to 5 Times as Long

An Eastern manufacturer formerly used gasoline, kerosene and other materials for cleaning motor parts in the reconditioning shop. Dirt was not completely removed, however, and fumes were both a fire and a health hazard, requiring the installation of hoods.

**All troubles were eliminated** when Sun Spirits was adopted. Now parts are cleaned more completely. There are no objectionable fumes. The fire hazard is reduced.

**Slow evaporation** in the cleaning tanks means that Sun Spirits lasts 4 to 5 times as long as carbon tetrachloride, and costs 75% less.

**This case is typical** of the many plants in which Sun Spirits is used for fast, simple, metal cleaning. There are no dangerous chemicals; no complicated, expensive machines; no need for highly skilled operators. Get in touch with the Sun man for complete data.

**SUN OIL COMPANY** • ***Philadelphia 3, Pa.***
*Sponsors of the Sunoco News-Voice of the Air — Lowell Thomas*

**SUN**
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**INDUSTRIAL PRODUCTS**

is every reason to believe that the growth of this field has just started. According to Quarles, the dispersions offer the opportunity for the development of resilient coatings of many colors. From the utilitarian gaskets to bright rubbery coatings for household appliances, the wide range of color possibilities of the vinyls is predicted to prove a distinct advantage. If there is a large increase in the use of light metals in the houshold of the future, the use of bright, flexible, leatherlike coatings may go far toward removing the prejudice against the cold lifelessness of metal furniture. The color will be permanent, scratches will not show, and the resistance to abrasion will be good.

* * *

## Liquid Polishing and Buffing Compounds May Offer Advantages

MOST finishing men agree that application of the correct amount of buffing compound at the correct time, without being wasteful, on automatic buffing machine operations has been a serious and costly problem. On many jobs, the polishing machine will have in operation two or three wheels, different both in diameter and width as well as degrees of hardness. The development of polishing and buffing compounds in a liquid form that can be sprayed on the buff or polishing wheel has been found advantageous in providing economical operation. This was the general concept given at the 33rd Annual Convention of the American Electroplaters' Society by H. J. McAleer of the Formax Manufacturing Company, Detroit. This new process is not limited to automatic buffing machines but may be applied also to hand and semi-automatic buffing operations.

According to McAleer, the equipment required is as follows: (1) necessary air supply; (2) air regulator or transformer to reduce the main line pressure; (3) pressure tank and reservoir for storing the compound under pressure; (4) spray gun head mounted near the buffing or polishing wheel; (5) either foot or automatic cam or electric release valves to spray the compound on the buffs or the work.

Since the compound is in a liquid form, the spray-mist applied can be regulated so that it is applied only in the amount required. Further advantages reported include an increase in buff life since the "compound head" is constantly maintained. In the case of hand buffing, the liquid spray application is controlled by the operator's foot and both hands are free at all times to handle the work.

* * *

## Soft Water Rinses Improve Aluminum Finishes

ACCORDING to Robert S. Herwig, chief plating engineer, Bogue

*Mr. Electroplater*—You have been searching for years for an additive that would harden and render your silverplate tarnish resistant, at a reasonable cost. HERE IT IS . . .

**GRANIUM CYANIDE**

*Write for new booklet describing this and other products.*

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# The Back-Stand Idler of MODERN DESIGN

Light weight aluminum pulley perfectly balanced.

Double sealed precision-made ball bearings.

Easily changed from right to left by loosening two set screws and reversing shaft.

Rugged all steel construction for a lifetime of trouble free performance, weighs only 165 lbs.

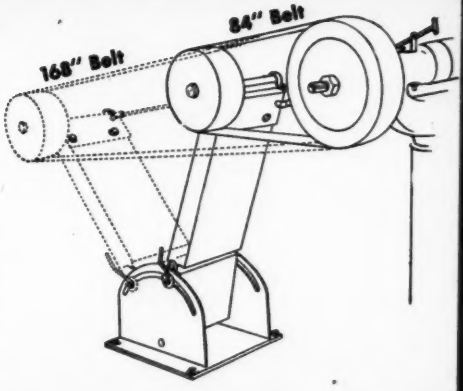
Snubber prevents vibration even with out-of-round contact wheel or irregular work application.

Adjustable Belt Tension maintained by four leaf-type springs.

Broad lateral adjustment for any belt length from 84" to 168" without moving base.

## Use any length Belt

30 Second change to any belt length from 84" to 168"




"Has every feature we've ever wanted." That's what users say of the PRESTO Back-Stand Idler. Quickly adjustable for any length belt from 84" to 168". Adjustable spring tension with snubber action—no vibration even with out-of-round contact wheel or irregular work application. Handy angular alignment adjustment. Light weight aluminum pulley, perfectly balanced. Double-sealed precision-made ball bearings. Universal Mounting—works in any position. Easily changed from right to left. Rugged all steel construction. Carried in stock for immediate shipment. Order thru your Jobber or write us.

Electric Company, Paterson, New Jersey, it has been found in actual practice that production can be increased and rejects diminished by rinsing all aluminum work after alkaline cleaning prior to electroplating or anodizing in rinse water of zero hardness. Also see "The Iron Age," July 11, 1946. If it is necessary to seal the finished oxide coating, this same zero hardness water will not introduce any source of trouble caused by staining.

Based on Herwig's recommendations, rinse water of zero hardness and essentially free of iron, copper, and manganese can be readily obtained by installing an inexpensive and easily regenerated cation exchanger of the Belcolite type in the main water supply. This is not only recommended but is stated to be necessary if the rinse water is over 6 grain hardness and if the maximum performance from aluminum finishing baths is to be expected.

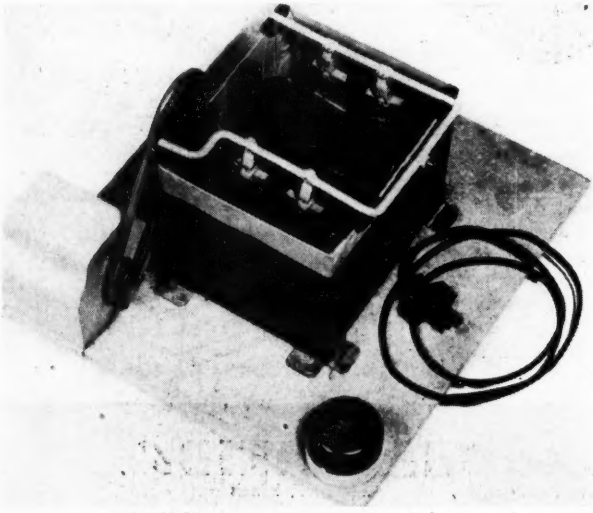
* * *

## Micro Barrel-Plater Proves Useful In Many Finishing Operations

THE experience of metal finishers specializing in electroplating is generally the same as that reported by H. S. Morgan of the Hamilton Watch Company, in that it is not easy to obtain a manufactured barrel plater for small parts which will require only a small quantity of plating solution. Accordingly, engineers of the above company constructed a micro-barrel plater of the type shown herewith which has been found to be extremely useful and practical in the plating of many types of small parts.

Using the micro-barrel plater, quantities of small parts can be satisfactorily plated without large or cumbersome equipment and volumes of solution. New and experimental plating solutions can be tried under simulated production conditions without requiring more than 1500 ml. of solution. The entire assembly is mounted on a non-corrosive base, one foot square. A removable tank of stainless steel, coated on the inside with an acid-alkali resistant, insulating material prevents current loss and possible attack on the metal by corrosive solutions.

Two battery connectors, on each side of the barrel, provide for making contact and holding the anodes in position. These clamps also make possible a quick change of metal and anode-cathode area ratio. According to the description of the micro-barrel plater, the barrel is constructed of hard rubber, perforated to allow the free flow of solution in and out of the

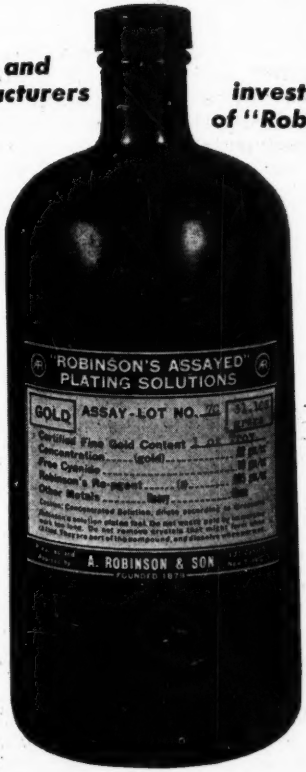


Micro Barrel-Plater
*(Photo courtesy Hamilton Watch Company)*

# Old in Years
# MODERN IN INDUSTRY

***Platers and Manufacturers***

***investigate our Products - take advantage of "Robinson's 66 years in Precious Metals"***




## ROBINSON'S ASSAYED (100%) GOLD PLATING SOLUTION

**FIRST IN THE FIELD**

Robinson's Assayed Gold Plating Solutions were the FIRST Standardized Liquid Gold Concentrates. They succeeded because critical technical buyers, in and out of the plating room, adopted them and endorsed them.

***They Feature***

Gold by weight, not by the quart

Continuous use of bath, through replenishment

Economy—Uniform Results

***In calculating comparative costs, remember that***

A Troy ounce contain 31,103 grams
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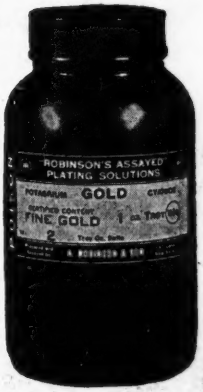
***And note that***

Robinson's label says TROY and Robinson's Gold weights are 100%




## ROBINSON'S ASSAYED POTASSIUM GOLD CYANIDE

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**ROBINSON PRODUCED THE FIRST STANDARDIZED LIQUID GOLD PLATING CONCENTRATE**

We now give you a Standardized

**Potassium Gold Cyanide in Salt Form.**

Successful in War, it has already been adopted by, and taken a place in, civilian trades. Our label will give you the guaranteed Gold weight in TROY—100%.

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barrel. Round metal tumblers are fastened to the inside of the barrel to provide cathode contact and to tumble the parts for uniform plating. In cases where immediate contact and circulation is advisable, the electric motor and current for plating can be turned on and the barrel containing the parts can be placed in the slots and dropped into place. Simultaneously, the gears are meshed and the cathode contact is made so that plating will begin immediately.

Power to rotate the barrel is furnished by a small electric motor and carried to the bottom of the tank through a train of hard rubber gears. Space is provided for a specially designed immersion heater and thermocouple for automatic control of warm or hot solutions. In the production plating of small parts, an extra barrel can be made for the micro barrel-plater so that one lot of parts can be prepared and placed in the barrel while another lot is being plated.

With proper adjustments, Morgan reports good results in plating cadmium, nickel, gold, silver, indium, cobalt-nickel, and copper from conventional solutions. There is no doubt that other metals can be plated with equally satisfactory results. The micro barrel-plater is uniquely suited to experimental trials and investigations of new plating solutions. Thus, in addition to being useful for the production plating of many types of small parts, it is of particular value also to the laboratory where many of the ideas on plating and metal finishes originate.

* * *

## New Methods for Hot-Dip Tinning of Cast Iron

BASED on a report to the Journal of Iron and Steel Institute," (February, 1946) poor tinning quality of cast iron is shown to be caused mainly by the presence of graphite

MGC Plating Generators give superior plating of all kinds, at less cost
Whatever your plating problem, you'll find an MGC Motor Generator Set to do your job quicker, easier and with more profit. They're available in a wide selection of models from experimental plating sizes to factory production units. Ball bearings, special windings, compact single unit—are features that offer longer life with maximum operating economy. MGC Buffers and Grinders are especially designed for use in connection with plating work, and are built for dependability. Write for details today.
Write for Complete Details . . . No Obligation
Motor Generator Corp., Box PF-106, Troy, Ohio
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"One of the World's Largest Builders of Electric Generators"

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ONE Source

APOTHECARIES HALL COMPANY
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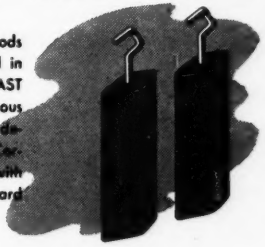
1849
97TH Year

One Standard of Quality

Apothecaries Hall Trade Mark your assurance of unvarying quality. For 97 years AHCO products have been preferred by the metal finishing industry because of dependable performance.

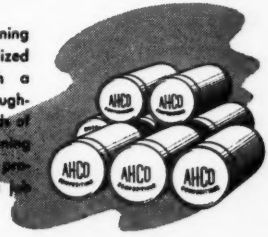
## NUCAST 99+% NICKEL ANODES

Advanced production methods and rigid laboratory control in the manufacture of NUCAST Anodes produces a homogenous grain structure resulting in dependable plating efficiency. Corrosion is fast and even, with anode surfaces remaining hard and firm until exhausted.



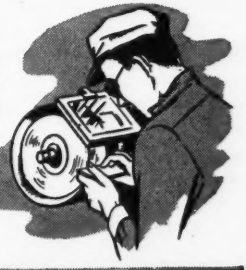
## AHCOLOID METAL CLEANERS

For every industrial cleaning operation there is a specialized AHCOLOID Cleaner, with a method of application thoroughly proved by use in hundreds of plants. AHCOLOID Cleaning Compounds save countless production hours . . . do the job thoroughly . . . quickly.




## AHCO BUFFING COMPOSITIONS

Standard grades of AHCO Buffing Compositions have been developed to meet practically every plant condition. Special compounds are available for cutting and coloring sterling silver, chromium, aluminum, hard rubber, and plastics.



APOTHECARIES HALL COMPANY

Box A WATERBURY 88 CONN.

flakes and to be intensified by contamination of the iron surface by graphite sludge after pickling in acids. Improved tin coatings can be obtained by reducing the duration of pickling in acids to a minimum, which is facilitated by good mechanical cleaning.

Two new methods of preparing cast iron for hot-dip tinning are reported: (1) immersion in a fused zinc chloride-sodium chloride eutectic mixture at 300-350 deg.C. followed by dipping in tin covered with a layer of the same fused salt mixture at 300 deg. C.; (2) light pickling in acid to "open up" graphite flakes, immersion for 15 minutes at 300-350 deg. C. in fused sodium nitrate - potassium nitrate eutectic mixture in order to oxidize surface graphite, pickling in dilute hydrofluoric acid to remove the scale formed in the nitrate bath, fluxing, and tinning. Adhesion of deposits produced by both coating procedures is reported as satisfactory. Finish engineers dealing with hot-dip tin coatings on cast iron may find it profitable to investigate these new procedures.

---

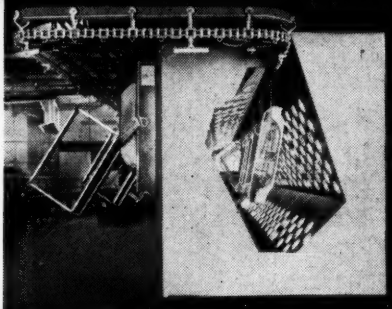
**"Sodium Hydride Descaling,"** a reprint of an article describing a steel mill's experience with sodium hydride descaling in salt bath furnaces is now available free from the Ajax Electric Co., Inc., Frankford Ave. at Delaware Ave., Philadelphia 23, Pennsylvania.

---

**Wyandotte Maintenance Cleaners.** A leaflet prepared by the Wyandotte Chemicals Corp., J. B. Ford Division, Wyandotte, Mich., describes the company's specialized line of products for maintenance cleaning, including mopping and scrubbing floors, washing painted surfaces, and cleaning porcelain enamel. Advantages of using these products—Detergent F-100, El-Bee Cleaner, 97 Paste, and Steri-Chlor—as well as simple directions are included in the leaflet, copy of which is available free upon request.


4 Sizes and Shapes to Bake . . .
*One* Infra-Red Oven Does It!

**At Ironrite Ironer Company, Mt. Clemens, Michigan, ironer covers and panels, involving *four different* sizes and shapes, require paint baking. Jensen designed, engineered and built *one* "dual-heat" oven to efficiently do this *four-fold* job. A 6-minute bake on synthetic white enamel paint speeds production. Jensen's exclusive "nesting" arrangement of lamps assures *evenness* of color. (Parts are conveyed by a Jensen "loop-around" conveyor.) Write Jensen about *your* problem today!**

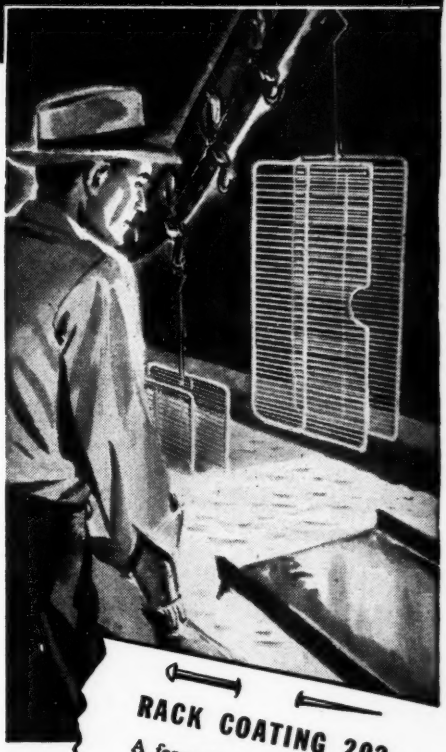


JENSEN SPECIALTIES, Inc. JENSEN 9331 FREELAND DETROIT 27, MICH.

DESIGNERS and BUILDERS of "DUAL HEAT" INFRA-RED OVENS • STANDARD and SPECIAL CONVEYORS

# A WHOLE YEAR OF TOUGH CLEANING CYCLES

*. . . and Coating Still O K!*



## UNICHROME RACK COATING 203

### The Air-drying Coating that Platers Prefer

A large metal-process plant reports that racks protected with Unichrome Coating 203 have given excellent service through an entire year of severe cleaning cycles. Service records like this show why so many plating-room foremen and superintendents prefer Coating 203 for all of their air-drying rack coating requirements.

This coating has excellent adhesion for all plating cycles such as chromium, nickel, copper, zinc, and cadmium. It's easy to apply—simply dip the rack in the convenient open-end drum and hang it up to dry. Tough and flexible, it stands plenty of rough handling and cuts cleanly at contacts. Write today for prices and data.

**RACK COATING 202**

A force-drying coating that provides the *extra* adherence necessary for the most severe cycles; such as anodizing and hot alkaline cyanide solutions.

**UNICHROME**

**PROCESSES AND MATERIALS FOR SURFACES THAT SURVIVE**

Chromium Plating • Porous Chromium • Unichrome* Copper • Unichrome Lacquers • Ucilon* Protective Coatings • Unichrome Stop-Off Lacquers and Compounds • Unichrome Dips • Unichrome Rack Coatings • Anozinc* Compounds • Unichrome Strip

*Trade Mark Reg. U. S. Pat. Off.

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Detroit 7, Mich. • Waterbury 90, Conn. • Chicago 4, Ill. • Dayton 2, Ohio • Los Angeles 11, Cal.

# Finishing a Modern Refrigerator

By BURR PRICE

STUDY of the production of a modern refrigerator provides a revealing picture of why these successors of our old-fashioned ice boxes are such models of efficiency, why they rank so high on the postwar demand lists of householders and businesses which deal in perishable merchandise. Factor No. 1 is, of course, the remarkable development of the mechanical refrigerator units; but of equal importance is the perfection of the cabinets through the exercise of "know-how" and painstaking care, from the preparation of the basic metal to the finishing of the gleaming white exteriors, the white and colored interior boxes, trays and compartments, and then the final assembling and fitting.

We recently observed the metal-finishing operations performed on refrigerators at the plant of the McCall Refrigerator Corporation at Hudson, N. Y., where units of varying sizes and design are being produced for commercial users. The finishing work is done in two separate departments: one, the paint department, where the inside and outside "claddings" (linings) are finished; and the other, the porcelain enamel department, which handles all interior trays, boxes, and so on, with which food stuffs come in contact, as well as some of the outside "claddings" when specifications call for porcelain enamel exteriors. Constant vigilance against surface imperfections which might later affect the efficiency of a unit is the watchword in both divisions.

The enamel department at the McCall plant was opened last December, having been installed by S. P. Edson, ceramic engineer and superintendent of production, whose foreman, John T. Scott, explained to the author the various steps in the metal finishing. The vitreous enameling stock comes from the rolling mills in clean condition, in sheets averaging 36 x 120 inches. It is delivered to the cutting room, where there are three power-driven square shears—one 120 inches wide, one 42 inches wide, and one 36 inches wide. After the stock has been cut to sizes called for by the various specifications, it is passed along to an adjoining set of tables for punching, cutting corners, slots, drilling holes, and so on.

The pieces are next passed to the braking machines, electrically driven, where the flange and angle work is done. Following this, they are passed on to the fabricating room, where there is a variety of welding machines, including spot welders for the bulk of the work; acetylene welders where spot work is not feasible, as on corners; and electric welders for certain other types of work. There is also a portable spot welder for use on difficult-to-reach interiors, such as angles,

*the power you want... when you want it!*

to meet varying demands of plating and anodizing

## G-E COPPER-OXIDE RECTIFIERS

**offer quick power change-over . .**

There's no need to be tied down by a fixed power supply. The flexibility of General Electric copper-oxide rectifiers offers you a wide choice of current and capacity to meet the requirements of various types of plating. You can easily install one or more G-E units without special foundations or expensive accessories. Others can be added as needed. With G-E rectifying equipment, you have "building block" changeability for series, parallel, series-parallel circuit arrangements.

Basically a step-down transformer and a rectifier, each self-contained G-E unit supplies smooth, steady d-c in blocks of 6 or 12 volts. Control is manual or automatic. With the automatic control, voltage is maintained at within plus or minus one per cent from no-load to full-load. Adjustment is controlled at a-c input for economy.

There are many G-E combinations designed and engineered to meet the most exacting plating and anodizing conditions. For information and illustrated booklet, write Section A30-1070, Appliance and Merchandise Dept., General Electric Company, Bridgeport 2, Connecticut.

GENERAL ELECTRIC

brackets, frames, and so on.

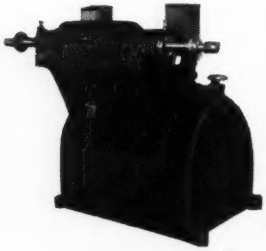
Buffing and polishing by electrically-operated buffing machines is the next step, and immediately precedes the movement of the work into a room for annealing or scaling, which is the first step in the actual finishing operation. In the annealing room, the pieces are placed into a furnace, which is brought up to a blue heat of approximately 1,200 deg. F. and kept there a half-minute to burn off all grease, oil, dirt, or other contaminations.

After this operation, the pieces are immersed in a bath of standard Troxide, a synthetic sulphuric acid composition specially designed to cleanse the parts of the carbon which remain on the metal after the annealing. So that the Troxide can penetrate to all corners, angles, and surfaces of the various parts, they are placed in open formation in a steel basket and plunged into the Troxide bath, which is maintained at a heat of approximately 140 deg. F., and are kept there for twenty minutes. A slight agitation of the bath is produced by a steam hose which is employed to sustain the heat.

The basket is handled by a crane which runs on a U-shape overhead trolley. Immediately adjacent to the Troxide bath is a tank of similar size containing cold water. The basket is carried along to this for a quick rinse bath. In line with this cold water tank is a third tank, containing a boiling soda solution, into which the pieces are plunged to neutralize any acid which may be remaining on the steel parts. The reason for this solution being hot is because it "works" better and also heats the steel, thus enabling faster drying without risk of rusting.

After the soda bath, each piece is subjected to close examination by means of a water sponge. This shows up any grease or other foreign element which may still be lingering on the surface. When a piece passes this


A COMPLETE LINE OF
BUFFERS — POLISHERS



T TYPE TEX DRIVE BUFFER

Illustration shows open spindle — Also available in encased type spindle extension.

Hisey Buffers and Polishers offer a complete line of sizes from ¼ h.p. to 25 h.p. with speeds for any type wheels. Vibration is down to a minimum to assure you of better finishes, less wear. Consult us for your particular finishing needs.

WRITE FOR CATALOG 70AF.

The HISEY-WOLF Machine Co.
Cincinnati 25, Ohio

# *No Flaking - No Chipping - No Peeling*

## when you use Anti-Corrosive IRIDITE as a paint base

IRIDITE provides a firm base for paint and clear lacquer . . . as well as a corrosion-licking, protective finish . . . on zinc die cast, zinc and cadmium plated, and galvanized products. IRIDITE keeps the zinc from fouling the paint . . . prevents formation of the soapy, chalky underlying film that destroys adhesion. IRIDITED products take paint readily . . . hold it permanently . . . without flaking, chipping or peeling!

### IRIDITE TEST-imonials

"We have nothing but satisfactory reports on the parts that were Iridite treated on our two body valves."
EDWARD B. LOCKWOOD,
*Vice President*
Streamaster Shower Corporation
New York, N. Y.

See how IRIDITE fits into your production. Send for FREE TEST PANEL . . . and subject it to the same corroding conditions your products must meet. Write Today.

### LICKS CORROSION, TOO!

Moreover, IRIDITE is widely used as a final protective finish . . . on zinc, cadmium, galvanizing . . . in black, blue, green, red, bronze, olive drab and transparent IRIDITE bright. And to cut costs, use IRIDITE in combination with zinc plating to replace more expensive materials. Simply immerse your products in an IRIDITE solution . . . manually or automatically . . . on racks or in bulk . . . for 15 to 60 seconds . . . at normal shop temperatures.

### SEND FOR FREE TEST PANEL!

Test IRIDITE as a paint base or a protective finish in your own plant, under your own conditions. Send for your FREE TEST PANEL. Rheem Research Products, Inc., 510 Chemical Building, 4004 E. Monument Street, Baltimore 5, Md.

**BRANCHES:** 570 Lexington Ave., New York 22; 2411 Sichel St., Los Angeles 31. Distribution in: Waterbury; Detroit; Los Angeles; Minneapolis.

Reg. U. S. Pat. Off.

RHEEM RESEARCH PRODUCTS, INC.
**IRIDITE**
4004 E. Monument St., Baltimore 5, Md.

examination—which is only the beginning of a continuing process of closest scrutiny—it is ready for the ground coat spraying operation in one or the other of a two-booth unit, depending on the color desired. The booths are arranged back to back and are equipped with a suction blower serving them both, which automatically draws the "dust" away from the operator and at the same time catches and saves the surplus, which is salvaged from a side bin at the end of the day.

The pieces are now stacked for air drying at atmospheric temperature, and soon are ready for the first burning. The burner and his helper arrange them on sets of special Duraloy spikes on long sliding bases, which are pushed into the furnace for four minutes in heat ranging between 1,500 and 1,650 deg. F. maintained by a double oil burner. The walls are brick-lined and 36 inches in thickness. The author watched a set of trays go into the furnace with pieces ground coated in a light blue and emerge with the pieces a dark blue.

After the first burning, the pieces are again carefully examined for imperfections. Where a white surface is called for in the specifications, the white ground coat is now sprayed on, air dried, and the pieces are burned again and put through another examination. The second and final white coat is then applied, and the pieces are placed into the furnace for the third burning operation.

Between the first and second white coats, an expert hand-operator brushes and edges certain of the sections to remove spray residue of the color on those sides and parts which is not called for by the design. The spray enamel is prepared at the McCall plant from frit, a basic chemical formulation prepared to meet the specifications for various types of finishes. As it comes from the bag, frit is in the form of small irregular crystals, white or blue or whatever color is to be used. The frit is now mixed with additional chemicals as required, clay for suspension purposes, and water and ground in pebble mills at 48 revolutions per minute for from four to nine hours. It emerges as a liquid containing fine particles of glass. This is the coating that is sprayed on the metal. When the water content evaporates, a fine coating of glass dust remains on the surface, which is melted in the high heat of the furnace to become in actuality a sheet of glass fused to a piece of steel.

When the porcelain enameling process is completed, the pieces are sent to the stockroom where they remain until needed for final assembly with the pieces which come from the paint department.

The steel used in the painted sections comes from the mills with a shop prime coat. It is first sponged over with gasoline and then Bonderized.

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The prime coat is then sprayed on, sanded down, and the steel sprayed a second time with the finish coat, providing a white high gloss surface. In certain cases, the inner linings are painted with a special Du Pont Underframe black before the insulation material is installed.

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---

**Best's Safety Directory, 1946-1947 Edition.** Published by Alfred M. Best Co., Inc., 75 Fulton St., New York 7, N. Y. Price, $5.00.

This volume presents to management, safety directors, purchasing agents, plant superintendents, and industrial medical personnel an "encyclopedia" of essential information on over 1,000 products, devices, and equipment used in safety, first aid, hygiene, health conservation, and fire protection. By telling what safety product to use, when to use it, how to use it, and where to get it, the directory helps to prevent accidents, decrease production costs, and eliminate time and energy normally wasted in seeking safety information.

Best's Safety Directory is cross-indexed and contains a comprehensive, topical index which makes for easy use. Compiled and edited by men thoroughly familiar with the field of safety and industrial health conservation, the volume should prove of practical and valuable aid to those responsible for the safety of lives and property.

---

**"What, Why, Where, How"** is the title of an eight-page leaflet prepared by the Wyandotte Chemicals Corp., J. B. Ford Division, Wyandotte, Mich., listing the advantages of Wyandotte Boiler Compound and directions for its use. The leaflet answers the questions asked in its title with diagrams, charts, and written instructions. Copy free upon request.


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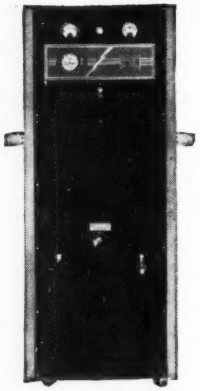

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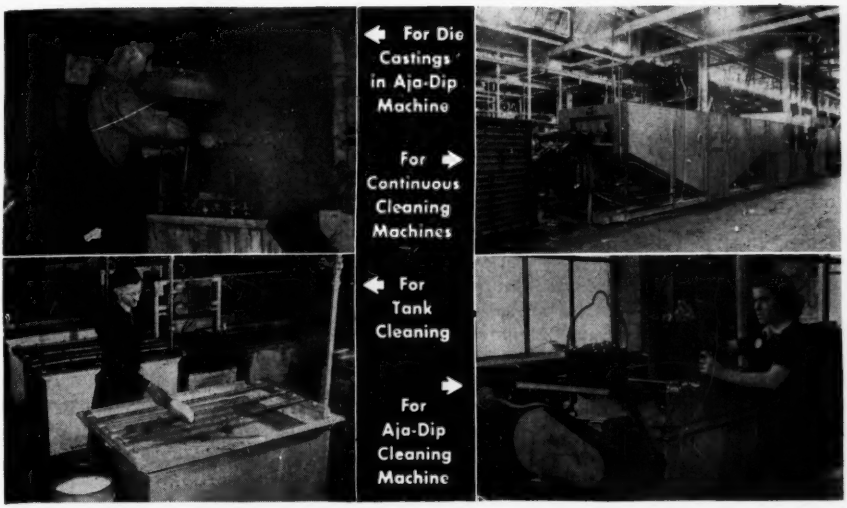


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Cleaners • Machines

# Barrel Finishing of Metal Products

## Factors to be Considered in Barrel Selection

By H. LEROY BEAVER
Barrel Finishing Consultant
Lansdale, Pennsylvania

WITH so very many concerns writing to us for guidance in the selection of barrels for use in their reconversion production work, it might be advisable at this time to discuss, or in a sense, review the various types of barrels available on the market and to summarize the results that might be reasonably expected from the use of these barrels.

To those who have followed this series of articles there should be considerable familiarity with the two "types" of barrels principally discussed, namely the high and narrow type as exemplified by the Abbott Barrel and the long and narrow type as exemplified by the Baird Barrel. When we speak of these two barrels designating them as "types" it is only in a distinguishing sense. There are many good barrels available on the market in both these types, but they are so designated because they were the first of their kind on the market, have been in longer use, and hence are more familiar to most manufacturers as well as operators. In addition to these two types we also have what are generally known as oblique tilting type barrels and finally tubbing machines.

There is for you to consider in any examination of barrel finishing procedure, three factors. We would enumerate them in order of their importance, at least from our research point of view, as follows:

1. The cold working of the surface to close the pores that are present in all electro-deposited metal films in order to resist corrosion.

2. The cold working of the surface to obtain greater hardness and hence greater resistance to wear of the plated surface.

3. A burnished or polished surface for the sake of, shall we say, "over the counter" customer appeal.

These three factors, of course, relate to parts that have been cleaned and plated and then subjected to barrel finishing procedure, but in addition to these, we have preliminary barrel finishing operations to which parts are, when necessary, subjected to properly prepare them to receive plated surfaces of the various metals. Of these in their order of importance we might enumerate as follows:

1. Operations on metal stampings, both ferrous and non-ferrous for that much over emphasized process variously termed deburring or simply burring.

2. For removing surface area to provide more even areas on which to deposit either metal coatings or coatings of other materials, such as paint, lacquer, japan, and so on.

3. The use of barrels in cleaning of parts prior to either plating or some other form of finishing.

Now it might seem that to express the factors of barrel finishing in this way would be like hitching the cart ahead of the horse, but the fact is that the first three objectives are the more widely used for there are many parts operated in barrels that fortunately do not require preliminary treatment, and that respond to simple barrel finishing procedure.

Let us together then consider some of these factors and try to evaluate their importance as you might visualize them as being applied to the production work right in your own plant.

First, we start with the premise, and indeed it is more than that, that all electrodeposited coatings are porous, at least in some degree, some more so than others, and that in this state such coatings are totally unable to resist corrosion of the base metals on which they are deposited. This condition of porosity is admitted by all of the plating authorities with whom we have at various times discussed the condition, and so far as we have been able to learn, nothing has been developed in factors of electrodeposition that eliminates this condition which may then be considered as an established and very common fact.

Barrel finishing procedure can relieve this condition, but only to the extent that the parts under consideration may be susceptible to finishing by presently known barrel methods. We steer very wide of the general claims that all parts can be barrel operated. This is definitely not true. While it may be mechanically possible to put almost anything into a barrel,


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what comes out is of major importance, and as we have so very often said to you that in any consideration you may give to the use of barrels that you must take into consideration not only whether it may be mechanically possible to operate the parts in a barrel, but the equally important factor of whether such operation would be completely commercially practicable. What we mean by this is that while you might find it mechanically possible to perform a given operation in a barrel, that to attempt to install the process as a production factor might

Fig. 1—Test panels in which solid circle represents a single pore in an electrodeposited surface

well require additional floor space as represented by new construction and an investment in equipment with its consequent maintenance and operating costs that would be far in excess of any value you might receive from its use.

Now let us assume that you manufacture quite a wide variety of parts, blanked and formed from strip material. These have all been plated, and knowing the surface to be porous you wish to relieve this condition, so what is expected that you should do.

We are discussing here the various types of barrels, and maybe the simplest manner in which we can get across to you the thought we have in mind is to use three simple squares, each of which represents an electrodeposited test piece, but all three squares represent the same piece, as shown in Fig. 1.

In the center of square number one you will note a solid circle which represents a single pore in the electrodeposited surface. In the center of square number two you will note also a circle but only half as large in area as the circle in square number one, but which also represents a pore. The third square you will note is completely blank. Now not all electrodeposited coatings are of the same hardness and indeed the same metal can be deposited in varying degrees of hardness, but we do have a wide variety of electrodeposited metals among which are gold, silver, copper, brass, nickel, cadmium, and so on Now let us consider these three squares as being operated in two types of barrels and for purposes of illustration we will use an 8 x 24 barrel that we would term of the "low pressure" type; that is, a barrel eight inches in diameter and twenty-four inches long and carrying as a weight factor a load of one hundred twenty-five pounds of steel burnishing material. This load of material, you will note, spread out over a distance of twenty-four inches, would fill the barrel slightly more than one-half full, and to which would be added a sufficient quantity of parts to be processed to bring the load to approximately two-thirds full. Now we take test piece number one, operate it in this barrel, and whether for minutes or hours we can only add pressure comparable to the quantity and weight of the load in the barrel. With the utmost we can do, if we examine the part coming from the barrel we find that due to insufficient pressure the pore is not eliminated but only reduced in size so that it would represent the smaller pore as shown on plate number two.

Now, suppose we take this same plate, or perhaps an identical plate to plate number one and operate this in what we elect to term a high and narrow or high pressure barrel. This time, however, even though the di-

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mensions often read the same, they are quite different. In fact, for placing the diameter of the barrel first, as always should be done, we would find this barrel to be twenty-four inches in diameter but only eight inches wide, and instead of one hundred twenty-five pounds of burnishing material, this barrel will carry a full three hundred pounds, and also instead of this load being spread over an area twenty-four inches long, it is more closely confined to an area only eight inches long. Now operating the same plate in this high pressure barrel will, of course, exert greater pressure on the electrodeposited surface and instead of the remainder of a pore as in the case of the low pressure barrel, after appropriate operation in this high pressure barrel and examination of the surface, we would find that the pore had been completely eliminated as represented by square number three. We can think of no simpler means of enabling you to visualize the effect to be obtained from these two types of barrels. (And let us say here that you are not to believe that an 8 x 24 barrel and a 24 x 8 barrel produce the same results and that the only difference is in a transposition of the designation of the barrel size—you know that has been done.)

Now consider, too, that when you effect a closure of the pores as we have tried to illustrate to you, that it has been done only by reason of the fact that you have exerted sufficient pressure on the surface of the part to cause the metal to flow in the line of least resistance, and that in closing the pore you have, at the same time, effected another and most important factor and that is the hardening of the surface to provide for greater resistance to wear.

Now, if your procedure is such, and if the product also is such that all you wish is a highly burnished surface, and if the condition of porosity is not important or you plan to depend on a lacquer surface to provide for your corrosion resistance factor, then you need not be so meticulous with respect to the closing of pores and in such case the long and narrow or low pressure barrel will serve your purpose equally as well as the high and narrow or high pressure barrel. In setting out the foregoing examples we are only trying to provide for you, as we have always tried to do, the best job of factual reporting of which we are capable, based on test runs which we have made time and time again.

The fact of location of the test pieces to determine these findings we do not consider too important; that is, whether they are urban, rural or marine, for we have tried them all. For the greater part, these tests were made about fourteen years ago and if it would be of interest we might add that the urban tests (city) were made on the roof of the building at Park


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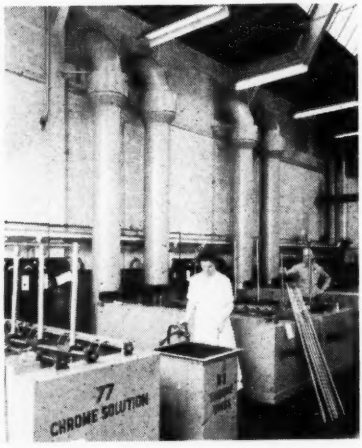
Avenue and Mellon Street in Philadelphia, a brief five blocks from the center of the city; the rural tests here at our home in rural Montgomery County, Pa., a matter of about two miles from the center of Lansdale, and the marine tests were set up at Manasquan which is on the coast of northern New Jersey.

We have read and studied report after report of plated test pieces being set out on racks under varying conditions of exposure, but we have yet to find where anyone as an individual, an organization, or as a committee, has ever included barrel finished parts on the test racks, parts that were barrel finished both in high and low pressure barrels to give a greater degree of authenticity to the results of such tests.

We often have, and still wish that some organization, such as the Research Committee of the American Electroplaters' Society or perhaps the Battelle Memorial Institute, might interest itself in setting up comparative values for parts barrel finished and the same parts not so treated. Such determinations, it seems to us, would carry more the weight of authority than if they were introduced by an individual. Whether with or against our will, we at this late date seem to find ourself shoved into the position of shall we say a sort of "One Man Fact Finding Commission."

Now as to the second factor, that is, of operations prior to plating or of preparing parts to receive the plate. Discussions of this deburring or burring factor during the past few years have developed plainly into what we call a mess. We see no excuse for it whatever. We have had burrs of all sorts and character and it is a plain pity that it took a war to bring them out into the open. The place to solve the burring problem is neither in barrels either high or low pressure nor in buff wheels or set-up wheels and abra-


# Looking for a Stopper to *Corrosion* Costs?

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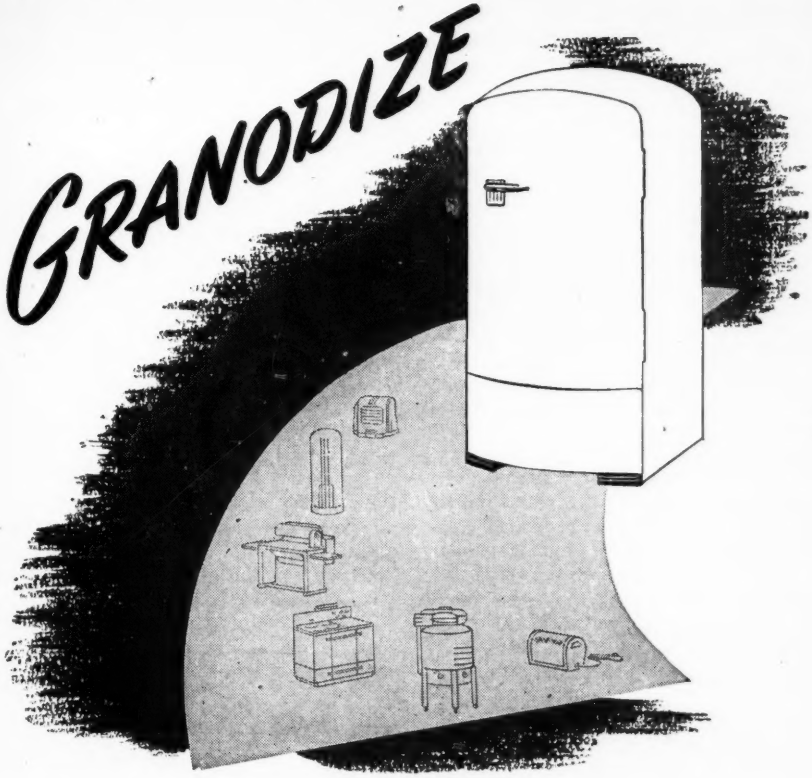

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sive compositions, but rather in the die department and press shop where the burred parts are produced. When we see two manufacturers working as subcontractors under a prime contractor and each producing identical parts for the same assembly, one with burrs rough enough to be used as wood scrapers and the other with clean-cut burrless blanks, we are more than ever convinced that if there were a proper and better understanding of die clearances with respect to the characteristics of the metal to be blanked and formed that much of this burr complex that now afflicts metal stampings and their finishing would disappear.

To accept blanks from the press shop that have long drawn and torn edges is simple suicide for the barrel finishing department, because, irrespective of the burring material used, the first ten minutes of operation will generally serve to create more scratches, digs and cuts on the plain surface areas than any amount of barrel finishing procedure would ever overcome. If burr you must, then never use hardened steel burnishing materials, whether balls or shapes, but only dead soft annealed burnishing material, because the former will only tend to fold over the burr on the face of the part, where the latter will tend to bite into and assist in its removal. To those who maintain their file of PRODUCTS FINISHING, they are, in this regard referred to what we have previously said on the subject in the discussion in the issue of September 1943.

There will not be sufficient space in this paper to provide for a discussion of the proper procedure in barrels in the operation of forgings and castings and this subject will receive treatment in a later issue.

Of the oblique tilting barrels, they are for the most part used in surface reducing operations and they will also receive separate treatment. Just who might have originated this type of barrel seems to evade all efforts to locate the first source.

The so-called tubbing machines will be found for the most part in jewelry manufacturing procedure or in the production of small lots of small parts that are generally gold plated. In this respect they do very well because gold is the one metal most susceptible to surface alteration by barrel treatment due to its extreme softness, and for the further reason that even porosity is somewhat taken care of by subsequent coats of transparent lacquers sprayed on the parts as a corrosion protective measure.

Quite obviously, it would be most difficult in a discussion such as this, to lay down any fixed set of rules for your guidance in the selection of suitable barrel finishing equipment to take care of your production requirements. Generally, we find that a given manufacturer will want all the information he can obtain and he wants it in most minute detail, both in the matter of barrel selection and materials to be used to obtain desired results and most complete instructions as to operation.

In any case, PRODUCTS FINISHING will be glad to be of every service possible within the limits of our knowledge of the subject of barrel finishing and its application.

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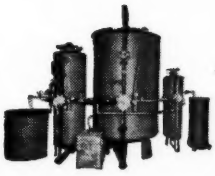

With ILLCO-WAY De-ionizing equipment, you get pure water at a *fraction of the cost of distilled water* — only a few cents a thousand gallons! Plating solutions can be purified and recirculated; plating and rinse waters can be reclaimed and recirculated. These and many other problems are solved by ILLCO-WAY equipment. Flow rates from 12 to 500,000 gallons per hour. Write for literature today.

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# NEWS of the Industry

## Everett G. Ackart Retires

The Du Pont Company announces the retirement of Everett G. Ackart, chief engineer, and the appointment of Granville M. Read to succeed him. Mr. Read has been assistant chief engineer of the company since 1943.

Mr. Ackart, who climaxed his career by supervising the design and construction of more than a billion dollars worth of war plants which Du Pont built and operated at the Government's request, has been with the company almost 40 years. He is a director of the Remington Arms Company, Inc., affiliated with the Du Pont Company, a member of the American Society of Chemical Engineers and the honor engineering society of Tau Beta Pi.

---

## Opens New Plant and Warehouse

Wagner Brothers, supplier to the metal-finishing industries, has announced the opening of a new plant and warehouse at 400 Midland Ave., Detroit, Mich. Besides increased space for buffing, polishing, and plating materials and equipment, the new quarters will house a complete analytical laboratory and modern pilot metal-finishing setup.

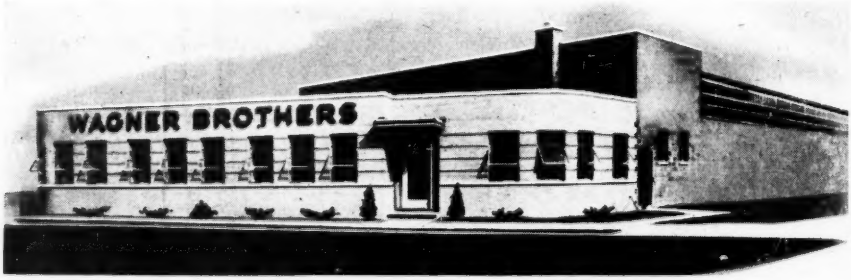
Wagner Brothers offers these facilities for customers' use for solving their daily production problems as well as for the thorough testing of new materials, methods, and equipment.

---

## New Additions to Field Sales Staff

The Banox Division of Calgon, Inc., producer of a rust-proofing material for steel by which protection is afforded during fabrication and a maximum bond afforded with organic finishes, announces the addition of two new men to its field sales staff.

According to C. T. Roland in charge of research and applications of the new treatment, J. G. Ripstra will work out of the Detroit office, covering Detroit, Grand Rapids, Chicago, Milwaukee, and other cities in that area. Richard J. Skillman, working out of the Philadelphia office will cover the eastern seaboard.




New plant and warehouse of Wagner Brothers

## R. T. Nalle Named to Pennsalt Board

Richard T. Nalle of Philadelphia, executive vice president of the Midvale Company, has been elected to the board of directors of the Pennsylvania Salt Manufacturing Company.

Mr. Nalle, who is 57, succeeds John S. Jenks, who died last March 13. A graduate of the University of Pennsylvania with a degree of electrical engineer, Mr. Nalle is vice president and a member of the board of the Franklin Institute of Philadelphia, a director of the Baldwin Locomotive Works and the Provident Trust Company, and a director of the executive committee of Henry Disston and Sons, Incorporated.

## Ward Appointed Udylite District Manager

The Udylite Corporation announces the appointment of Howard J. Ward as

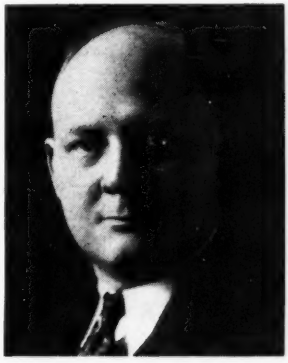
Howard J. Ward

district manager for the Michigan territory. Mr. Ward has been with the Udylite Corporation for the past ten years and during the war spent most of his time in Washington with the Army and Navy engineers on plating problems, for which he was given a citation from the Navy Department's chief maintenance engineer, Bureau of Aeronautics.

Mr. Ward replaces William H. Ross who recently resigned.

## Heads Wyandotte Pacific Division

Charles O. Chesnut has assumed the position of general manager of the newly organized Pacific Division of Wyandotte Chemicals Corporation. Manufac-



Charles O. Chestnut

turing and distributing activities in the Pacific states of the products of both the J. B. Ford and Michigan Alkali Divisions of Wyandotte Chemicals Corporation, and of the Natural Soda Products Company, will be directed from the new Pacific Division office, 502-14 Central Tower Building, San Francisco 3. The Pacific Division will also solicit business on the new Wyandotte organic specialties and fine chemicals.

Simultaneously, Mr. Chestnut became president of the Natural Soda Products Company upon the retirement of Stanley Pedder. The manufacturing operations of this organization are at Owens Lake, California.

Field sales activities of the former J. B. Ford Division (specialized cleaning compounds) will continue to be supervised by P. S. Spencer. Mr. Spencer joined the company in 1924, and has served as manager in Portland, Denver, and San Francisco, becoming Pacific Coast supervisor in 1941. Mr. Spencer will be sales manager of the newly organized Pacific Division and will continue to supervise the company's sales organization in the territories of Seattle, San Francisco, and Los Angeles.

Mr. Chestnut was vice president and general manager of McCord Corporation of Detroit before he joined Wyandotte Chemicals in 1945.

## Bayer Joins Special Chemicals

Walter R. Bayer has joined the Special Chemicals Co., New York, N. Y., where he will be in charge of sales. Previously, Mr. Bayer was with the Electrochemicals Department of E. I. Du Pont de Nemours & Co., Inc., for 21 years, and later was with the Empire Electroplating Supplies Corp., New York City.

Walter R. Bayer

## Lambros Precious Metals Corporation

George C. Lambros, president, announces the incorporation, as of July 1, 1946, of the Lambros Precious Metals Corporation. Refiners and dealers in platinum and other precious metals, this corporation has taken over the business of George C. Lambros and Precimet Laboratories.

The Lambros Precious Metals Corporation is located at 64 Fulton St., New York 7, New York.

## Added to Sales Staff

John M. Davidson, recently released from the United States Naval Air Force, has joined the sales staff of the Special Chemicals Division of the Pennsylvania Salt Manufacturing Company.

Mr. Davidson, a graduate of Dickinson College, served 4 years in the Navy. Before entering the service, he was a sales representative for the Ediphone Company and previously coached football and taught chemistry at the New York Military Academy.

## Nox-Rust Additions

Two appointments in the expanding sales organization of the Nox-Rust Chemical Corporation, Chicago, manufacturer of rust preventives, rust removers, industrial cleaners and protective coatings, have been announced by G. A. Daubert, president. Ray D. Cunningham joins Nox-Rust as director of sales. W. F. Costello, Jr., has been selected eastern sales manager for government and marine sales.

Mr. Cunningham comes to Nox-Rust from a previous position as general sales manager of the Wolf's Head Oil Refining Co., Oil City, Pa. During the war years he was manager of the rust preventive and protective coating department of the Kendall Refining Co., Bradford, Pa. In this position he worked with both industry and government in the processing of war materials at Army and Navy depots, ports of embarkation, and leading industrial corporations in the United States and Canada. Mr. Cunningham has spent over 25 years in the industrial, power plant, aviation, tractor, and automotive lubrication field.

Ray D. Cunningham

Mr. Costello formerly was with the Inter-Coastal Paint Corporation as manager of sales and technical services, Eastern Division. He was supervisor of Inter-Coastal's relations with war agencies in the preservation of Army and Navy equipment. Mr. Costello's headquarters are, at present, in Baltimore.

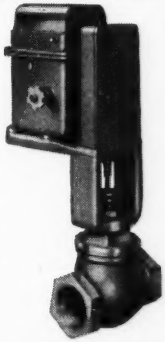
# BARBER-COLMAN

## MICRO SYSTEM *for* FINISHING CONTROL

REMOTE BULB MICROTHERM

Plating tanks, anodizing baths, and many other finishing operations where uniform temperature must be maintained, can be improved by using the Barber-Colman automatic electrically-operated "MICRO System" of temperature control equipment. Features include simple construction, no relays, and maximum power at all points of the valve stroke: "Hunting" is eliminated and the valve is positioned quickly with "micrometer accuracy."

*Write for Bulletin*
"CONTROLS FOR INDUSTRY"



PROPORTIONING VALVE

BARBER-COLMAN COMPANY
1248 ROCK ST. • ROCKFORD, ILL.

# *Save* COSTLY PRODUCTION TIME

## PANOCO *Die-Cut* MASKING TAPE

**CUT TO YOUR OWN SPECIFICATIONS**
**ANY SIZE . . . . . ANY SHAPE**

ELIMINATES REWORK AND TOUCH-UP TIME

**Protect surfaces in spraying, plating, buffing and polishing operations, this modern, easy way. Speed work preparation.**

**RESISTS HIGH TEMPERATURES**

PANOCO MASKING TAPE DIVISION OF PAPER NOV. MFG. CO.
505 CARROLL STREET, BROOKLYN 15, N. Y.

## Sales Manager Appointed by Oakite

Announcement is made by Oakite Products, Inc., New York, of the appointment of J. C. Leonard as sales manager of its Industrial Marketing Division. Associated with the Oakite organization in the servicing of its spe-

J. C. Leonard

cialized cleaning materials and equipment for over 22 years, the last 16 of which was in the capacity of manager of the company's Chicago division, Mr. Leonard assumed his new duties on September 1, 1946.

He will direct the marketing and servicing activities of Oakite's industrial field staff from the general offices of the company in New York.

## E. A. Tice Joins International Nickel

E. A. Tice has joined the Corrosion Engineering Section of the Development and Research Division of The International Nickel Co., Inc., New York, N. Y., as a corrosion engineer. Mr. Tice was previously associated with Bethlehem Steel in its research department as an engineer in the field of corrosion, and graduated from Rensselaer Polytechnic Institute in 1939 with a B.S. degree in chemical engineering.

Mr. Tice is a member of the American Society for Testing Metals, the National Association of Corrosion Engineers, and The Electrochemical Society.

## Join Dow Sales Staff

Ray H. McLeod, a graduate chemical engineer of Northwestern University, has joined the cathodic protection sales staff of the Dow Chemical Company following his release from the Navy. Mr. McLeod is working in Dow's Chicago office.

Howard P. Atkin, after four years of service with the Army Air Corps, has also become a member of the cathodic protection sales staff of the company, working in the Los Angeles office. Mr. Atkin is a graduate in chemical engineering of the University of Southern California.

## Increases Research Laboratory Staff

I. R. Mockrin, former research engineer with Battelle Memorial Institute, and W. A. Blum, recently with the Tennessee Valley Authority, have accepted appointments to the research and development department of the Pennsylvania Salt Manufacturing Company. Other additions to the technical staff at Pennsalt's Whitemarsh Research Laboratories include W. A. Millsaps, formerly with Chemical Warfare Service, Edgewood Arsenal, Md.; A. J. Baldi, recently graduated from the University of Pennsylvania; and Miss A. L. Nicholson, former librarian from the development department, Naugatuck Chemical Division, U. S. Rubber Company.

Following their release from the armed services, J. H. Koob, L. C. Dormuth, R. A. Sprout, S. D. Loomis, and C. W. Hagerman, members of the company's research and development staff, recently returned to their old positions.

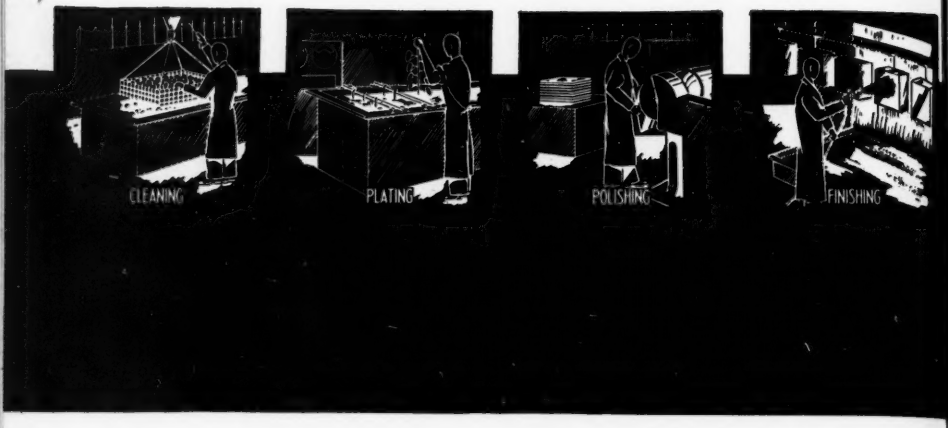
**"Protective Strip Coatings of Eastman Cellulose Acetate Butyrate"** is the title of a four-page leaflet issued by the Tennessee Eastman Corp., Kingsport, Tenn. The leaflet describes in detail the preparation and application of continuous, tough coatings to be used for the protection of metal parts of various kinds against corrosion and abrasion in transit or storage. Sources of equipment and ingredients, as well as prices of Eastman Cellulose Acetate Butyrate, for strip-coating compositions are listed in the leaflet, copy of which is available free upon request.

(Left) These aluminum cooking utensils are each finished on the outside by polishing and buffing, while the inside is given a satin finish by means of a very fine wire brush. The bottom is generally finished by scratch-brushing, which imparts a light gray, mat appearance to the metal.

(Photo courtesy Aluminum Company of America, Pittsburgh 19, Pa.)

(Right) The Alemite electronic wheel balancer illustrated herewith is finished in Lilly Varnish Company baked enamel, while the trim and ornamentation are produced from stainless steel with a No. 7 finish.

(Photo courtesy Stewart-Warner Corp., Chicago 14, Ill.)

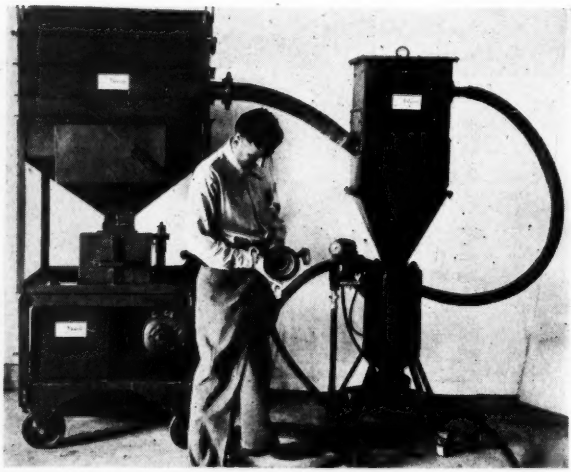



## Vacu-Blaster

The Vacu-Blaster, a blast-cleaning device for the cleaning or refinishing of metal, concrete, and other hard surfaces, is now in production by the Vacu-Blast Co., Inc., 1054 Broadway, Burlingame, Calif. A unique feature of the device is its vacuum return system which is said to prevent abrasive or other particles from escaping into the open.

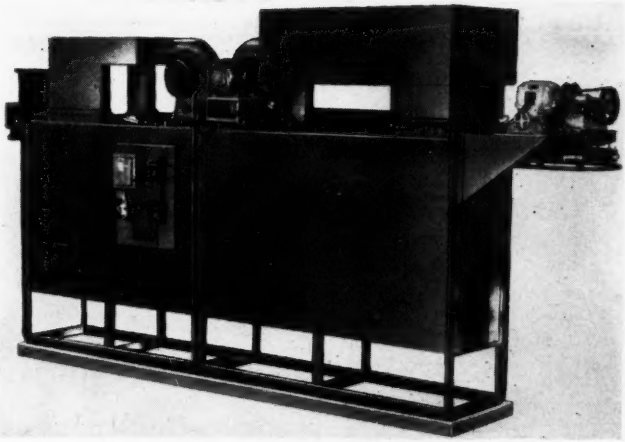
Effective in removing corrosion, paint, stains, and other deposits, the Vacu-Blaster is operated in much the same fashion as a simple household vacuum cleaner and may be employed without special precautions or preparation, the manufacturer claims. No masks, goggles, or protective clothing is said to be required. According to the manufacturer, the action of the vacuum pickup system is such that precision machinery, food products, or other objects of value need not be removed or covered although they may be adjacent to an operating Vacu-Blaster.

Many types of abrasives may be used, depending upon the nature of the work to be done and the finish desired. Spent abrasive is reclaimed by the Vacu-Blaster and used as long as it remains effective. The operation of the unit is predominantly automatic. The blast is controlled by a switch at the gun through which the abrasive is directed and through which grit and dust are picked up. The vacuum system operates continuously, returning grit and refuse to the reclaiming tank, where reusable grit is returned to the blasting system while



Vacu-Blaster

Optimus Continuous Cold and Hot Air Dryer



dust and refuse are shunted off to a dust collector.

Reclaimed abrasive is dumped into the grit-supply tank at the close of each operating cycle. At the same time, the blasting assembly is automatically flushed with clean air to prevent possible clogging. Loading of fresh abrasive into the Vacu-Blaster is said to be easily effected by the vacuum system, which picks up the grit through the blasting gun from a container on the floor.

## Norton 32 Alundum Abrasive

An aluminum oxide product to be known as Norton 32 Alundum Abrasive is announced by the Norton Co., Worcester 6, Mass. According to the manufacturer, the abrasive is made by a unique electric furnace process which produces grains of improved shape and structure, each grain being a complete, single crystal. Inasmuch as the crystals form individually, they assume a chunky, nubbly shape. The many plane surfaces form both exterior and re-entrant dihedral angles, the latter making definite rake angles which increase the cutting efficiency of the grains.

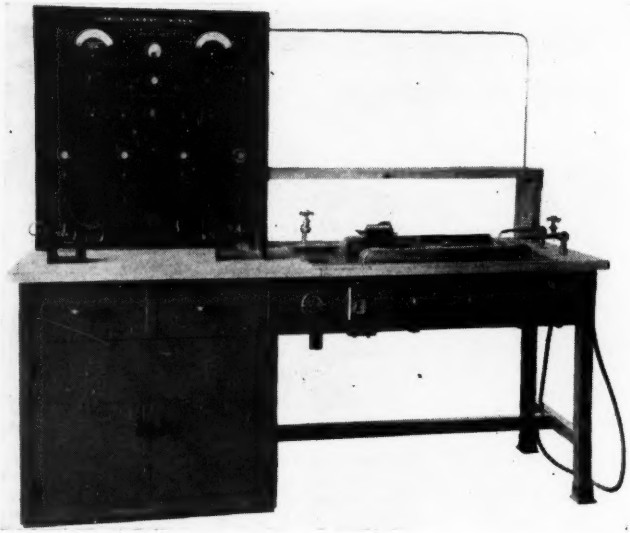
The process employed in producing Norton 32 Alundum Abrasive consists essentially of fusing high purity aluminous ores in an electric furnace in such a manner that individual crystals of commercial grain size are formed in a fluid matrix. The high-purity, chemically stable crystals are then separated from the matrix by a complicated, continuous chemical process. Without crushing, the naturally formed crystals are screened into standard grain sizes.

The excellent performance of grinding wheels made of Norton 32 Alundum Abrasive are due to the sharpness of the nubbly surfaced grains, to their blocky shape, and to their high purity, the manufacturer states. The sharpness of the abrasive allows for the production of grinding wheels which cut fast and coolly.

## Optimus Continuous Cold and Hot Air Dryer

Designed to dry loaded racks continuously before or after plating or after any other type of water-solution dip, the Optimus Continuous Cold and Hot Air Dryer illustrated herewith has been introduced by the Optimus Equipment Co., 133 Church St., Matawan, N. J. The machine is continuous in operation and functions almost completely closed. It can be connected to an exhaust blower so that all fumes can be drawn off. Any heating system—steam, gas, or electricity——can be employed. Drying time is usually from 4 to 6 minutes.

The Optimus Continuous Cold and Hot Air Dryer can be used as a single-stage dryer or in connection with a number of successive operations—alkaline, acid, or neutral. The machine is claimed to be most efficient as a stainless dryer, although other uses are practical. The cold air system includes a blower and a series of nozzles. The hot air system includes an air heater, recirculating blower, damper to adjust the mixture of atmospheric air and recirculating air, and necessary nozzles.



Diggin Electroplating Control Table

## Diggin Electroplating Control Table

The Hanson-Van Winkle-Munning Co., Matawan, N. J., announces the development of the Diggin Electroplating Control Table, a complete minature plating laboratory designed for either routine control of plating solutions or the most exacting research work on electroplating problems and processes. With the control table, test panels can be plated under closely controlled conditions so that the results of additions, impurity removal treatments, and variations in operating conditions can be observed. Only a few hundred milliliters of electrolyte are required to conduct the tests.

The Diggin Electroplating Control Table consists of a modern laboratory table, constructed throughout of steel, with a special corrosion-resisting finish. The working surface is selected calcite-free alberene stone. The table has a large storage cabinet in which a small motor generator and battery can be installed, and two drawers for holding anodes, cells, leads, and so on.

Above the working space on the right side of the table is a 36 x 36-inch control panel on which are mounted all instruments and service outlets required for electroplating tests. Four pairs of jacks are connected through selector switches to an accurate wide-scale ammeter and voltmeter. Each circuit employs a separate shunt for increased accuracy. The current in each circuit is controlled by a stepless carbon pile rheostat and an off-on switch. A heavy-duty D. P. D. T. switch makes it possible to connect the entire load to either generator or battery. (Battery operation is often desirable to eliminate current fluctuations or for making overnight runs.) By flipping two toggle switches, the generator is connected to the battery for charging and the small ammeter, normally in the electrocleaner circuit, indicates the charging rate, which, in turn, is controlled by the generator field rheostat.

An electric timer is provided for accurate timing of tests. A red pilot light is in operation during the test; when the selected time interval has expired, a green pilot light goes into operation simultaneously with a warning buzzer.

A 110-volt a. c. outlet is located at one side for operating motor-driven stirrers, electric hot plates, immersion heaters, and similar accessories. Two compressed air outlets with needle valves are provided for air agitation of electrolytes or for the operation of an air-driven stirrer.

The cleaner control section of the panel consists of an ammeter, a carbon-pile rheostat, an on-off switch, and a switch which shunts-out the rheostat. Leads from these controls are connected to a hinged anode-cathode rod assembly on the right side of the table top. Specimens are prepared for plating, rinsed, or given special treatments after plating in glass cells. These cells, six in number, are fitted by rubber gaskets into a heavy-gauge stainless steel tray. Three of the 1500 ml. cells rest on thermostatically-controlled hot plates. These positions are used for hot electrocleaners, hot pickles, and the final hot water rinse. The remaining three cells are unheated and are used for rinsing, pickling, cyanide dipping, or bright dipping. A sep-

arate control panel is provided with switches, pilot light, thermostatic control knobs, and a switch for the venilating fans. The stainless steel tray is pitched toward an opening in one end where the overflow from rinses passes through a silicon-iron sink and trap. Water taps are provided for continuous flow of water in the cold and hot water rinses. The overflowing water sweeps the tray clean of drippings from the various treatments. An auxiliary tap near the sink can be used as a spray rinse. Two stainless steel ventilation casings with ports opposite each cell withdraw hot vapors or corrosive fumes which otherwise might be objectionable to personnel or damaging to equipment.

An alberene stone shelf is located to the rear of the stainless steel tray, which is useful for storing samples to be examined. Above this shelf is mounted a rail on which plated specimens can be arranged in sequence for comparative study. For drying plated panels, an air hose with an automatic nozzle and shut-off valve is mounted along the right end of the table.

Four Hull cells and four special cells for bent cathode tests with the necessary leads and jacks complete the plating laboratory. Each plating position is normally fitted for the delivery of 15 amperes, equivalent to 273 amperes per square foot on a 1 x 4-inch bent cathode test specimen. Meter ranges can be altered to suit requirements.

## "Porcelanite"

The O. Hommel Co., Pittsburgh, Pa., has announced the development of a semi-glazed porcelain-like finish for protecting cold rolled and cast iron burning racks, burning tools, iron and glass furnace interiors, saggers, lehrs, decorating kilns, and ladle-linings. Known as "Porcelanite," the finish is said to prevent burning racks and tools of cast iron and steel from scaling. Stainless steel tools are claimed to clean easier after being coated with the material, which also helps extend the life of the paint.

According to the manufacturer, Porcelanite forms a semi-glaze finish over brick and clay in furnaces, sealing all crevices. The corrosive action of gases, flue dust, and slag is materially reduced, and the furnace is said to retain its heat in a highly satisfactory manner. Discoloration of molten glass, china-ware, and porcelain enamels by the iron oxide present is claimed to be prevented by Porcelanite, which can be sprayed or applied with a brush. It air sets, thus enabling the oven to be fired immediately.


DIPPING BASKETS

*Every Basket Rugged and Strongly Braced*

C. O. JELLIFF manufactures a complete line of dipping baskets, round and square, in sizes; mesh, and of metals and alloys to meet your requirements. Complete engineering service available to assist in solving your dipping basket problems.

***WIRE CLOTH OF ALL MESHES IN ALL STANDARD METALS AND SPECIAL ALLOYS***

WIRE PRODUCTS SINCE 1860

**The C. O. Jelliff Mfg. Corp.**

**124 Pequot Road**
**Southport, Connecticut**

## Eastman Butyrate Coating

A protective strip coating of cellulose acetate butyrate has been placed on the market by the Tennessee Eastman Corp., Kingsport, Tenn. The coating is intended for the protection of metal parts of various kinds against corrosion and abrasion in transit and storage and is said to be easily stripped from objects to which it has been applied.

According to the manufacturer, Eastman Cellulose Acetate Butyrate Coating is economical both in the amount of equipment entailed and in the manner of dipping, thus making it feasible for the protection of individual tools or gages returned to the storeroom after intermittent use. Another factor in economy is that the coating, stripped from metal parts, may be melted for reuse. It is transparent and permits complete visual inspection of coated parts.

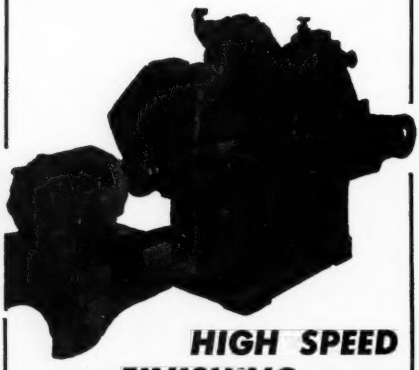
The dip is prepared by dissolving Eastman Cellulose Acetate Butyrate in hot castor oil, with a small amount of rust-preventive oil added. Articles are dipped mechanically or by hand into the hot liquid composition, which solidifies rapidly on the work upon withdrawal. The coating does not contract measurably on cooling, and is said to be suitable for articles which have sharp projections.

## Rolock Processing Carriers

Rolock, Inc., 1400 Kings Highway East, Fairfield, Conn., announces several new designs of processing carriers for the metal-handling industries. Included is

Rolock Style AO Inconel Basket

an acid cleaning and surface treating coil heated tank. Constructed of stainless steel, the tank is used to treat the surfaces of brass parts to afford them maximum cohesion when pressure molded to rubber. Large and strongly made, this reinforced tank is 5 feet x 1 foot 8

**HIGH SPEED FINISHING**

If you require Speed and Fast Feed surfacing for polishing outside diameter of tubing, rods, steel bars and other materials, you will find this PRODUCTION No. 101 polishing machine a real solution to your finishing problem.
No centering, no chucking, no holding. It can be operated with inexperienced labor.
Tandem machines for multiple finishing.

**PRODUCTION MACHINE CO.**
Greenfield Mass.

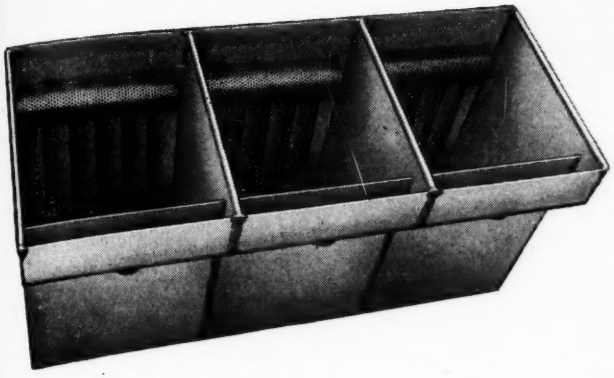
**ALLWOOD**

***"Vienna Brand" Lime***

Made from Limestone that is identical in chemical analysis and geological structure with European Imported Lime. Tests show a "lime cake" made from Allwood "Vienna Brand" Lime equals the finish made from imported lime.

*WRITE FOR FULL PARTICULARS*

**ALLWOOD LIME COMPANY**
Manitowoc • Wisconsin



Rolock Acid Cleaning and Surface Treating Coil Heated Tank

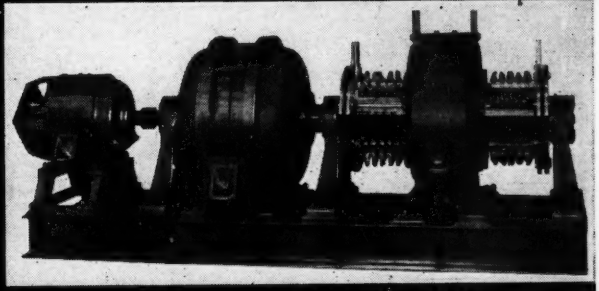
inches x 2 feet 6 inches deep.

The Style AO Inconel Basket, a new design of the more or less standard all-round "basket of a thousand uses," provides for the efficient and safe handling of average loads in many different kinds of processing operations. Strength, ease of repair, and minimum welding are features of this basket carrier.

The Rolock Monel Satin Finish Laboratory Sink, another new product in the company's line, is equipped with a removable screen drain guard which adds to its smart appearance. The Rolock method of emphasizing strongly reinforced construction in its custom-built carriers is evident in the company's stacking annealing baskets with carrier for pit-type furnace. These units are used for the batch annealing of tire valve stems which involves heating to approximately 1,250 deg. F. and quenching, and also for subsequent pickling. The three baskets in the carrier are capable of holding 500 lb. each or a total of 1,500 pounds.


COLUMBIA MOTOR GENERATORS

for Electroplating and other Electrolytic Processes

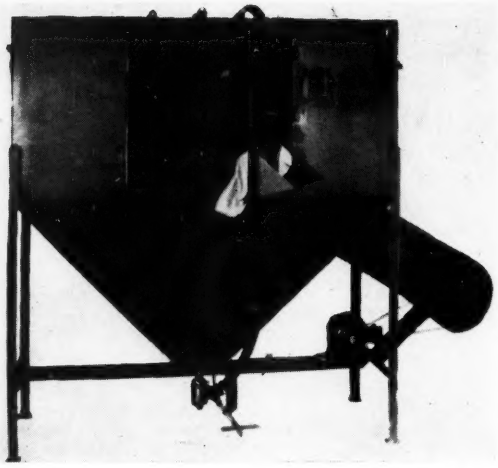


Columbia Generators embody every feature essential for dependable, 24-hour operation. They are built for electroplating service in sizes of 6 to 20 volts, 500 to 20,000 amperes, for anodic treatment of aluminum in sizes of 40, 50, and 60 volts, 500 to 3,000 amperes. Columbia Generators for other electrolytic processes range from ½ to 250 KW, 100 to 40,000 amperes, 6 to 60 volts. Write for full information.

COLUMBIA ELECTRIC MFG. CO.

4519 HAMILTON AVE., N.E. CLEVELAND 14, OHIO

*Chicago Office — 1525 E. 53rd St.*



Leiman Sandblast Cabinet with Combination Loading Door

## Leiman Sandblast Cabinet with Combination Loading Door

A feature of the Leiman Sandblast Cabinet illustrated herewith, product of Leiman Bros., Inc., 138 Christie St., Newark 5, N. J., is the combination door and armholes with cuffs which can be readily swung wide open for the easy ingress and egress of the articles to be sandblasted, as well as for the removal and replacement of the work basket. The cabinet is a self-feeding type with sand magazine from which the sand is fed through a nozzle and onto the work, after which it is continually returned by gravity to the sand magazine to be refed to the nozzle.

The Leiman Sandblast Cabinet illustrated is equipped with a motor-driven rotating tumbling basket for handling small articles such as bolts or buttons. The basket is arranged to tumble the parts over and over as it rotates, while


**FORM-A-ROC - W**

***A Perfected White Alkyd-amine Baking Enamel***

Complete hiding power, great adhesion, remarkable flexibility coupled with high surface hardness.

Baking schedules from one minute at 425 degrees F. to one hour at 150 degrees F. available.

Form-A-Roc formulation are also available in a wide range of colors and in a clear, tough, resistant topcoat.

**The Varnish Products Co.**

**5206 Harvard Ave.**
**Cleveland, Ohio**



If its metal polishing or metal finishing you want, check LUPOMATIC.

For efficiency in finishing metal parts, install a DEBURRMASTER.

Save time, money and produce assured results.

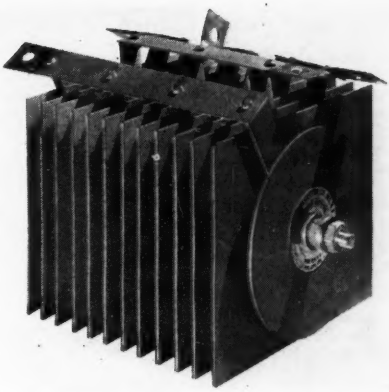
**LUPOMATIC TUMBLING MACHINE CO., INC.**
**4510 BULLARD AVE. BRONX, N. Y.**

the nozzle continuously sprays the work mass with sand, thus producing the desired cleaning action on all sides. When sandblasting is required on larger pieces of work, the basket itself may be quickly detached and removed from the cabinet, thus making the entire interior area available. The operator then holds the large workpieces under the nozzle, turning each piece over and over until it is entirely cleaned.

According to the manufacturer, the Leiman Sandblast Cabinet provides an efficient method for the rapid cleaning of work prior to finishing, with rust, scale, and carbon deposits, as well as burnt casting sand deposits, being quickly removed.

## Seletron Selenium Rectifier Plates

Developed specifically for high current capacity and especially applicable for electroplating and battery charging are the 5 x 5¾-inch selenium rectifier plates built on aluminum which are now being manufactured by the Seletron Division of Radio Receptor Co., Inc., 251 W. 19th St., New York 11, New York.



Seletron Selenium Rectifier Plates

Featuring long life and minimum weight with maximum heat dissipating value, the stacks when arranged in suitable combinations of series or parallel plates are extremely compact and provide for continuous economical service, the manufacturer claims.


*Now!* Special filters designed for your special plating solutions

**4 types of SPARKLER *Horizontal Plate* FILTERS *built for specific solutions--***

**For *Bright Nickel* (see cut), *Acid Copper, Acid Zinc* — use Sparkler's RUBBER-LINED model.**

**For *Gray Nickel, Acid Copper, Pickling Solutions*—use Sparkler's STAINLESS STEEL model.**

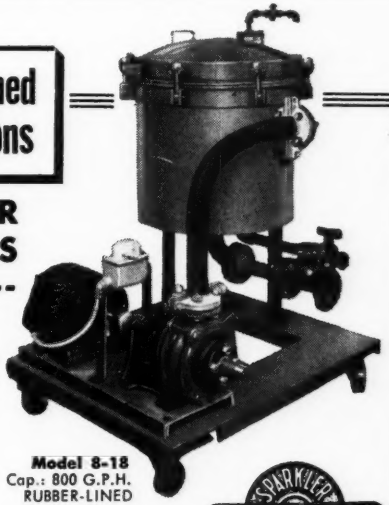
**For *Chromium*—use Sparkler's ALL-STEEL model (with Stainless Pump).**

**For *Copper Cyanide, Zinc Cyanide, Cadmium, Cleaners*—use Sparkler's ALL-IRON model.**

**Capacities 60 to 10,000 G.P.H.**

**SPARKLER Mfg. Co.**

**254 Lake St. Mundelein, Ill.**



**Model 8-18**
Cap.: 800 G.P.H.
RUBBER-LINED
Duriron Pump.

**Write for details.**

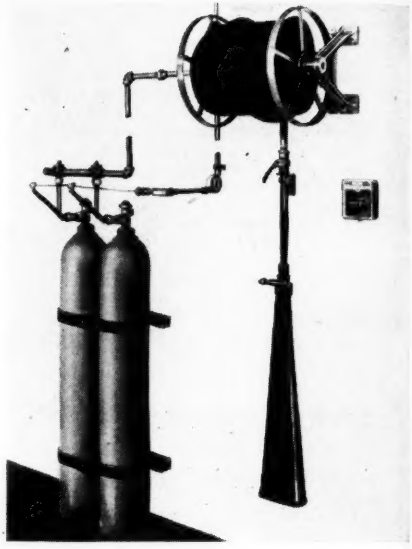
## Du Pont "Auric Brown" Pigment

Unusually bright, clean, and durable shades of brown colors for industrial enamels, trim paints, and other finishes are said to be obtained through the use of a pigment, known as "Auric Brown," announced by E. I. Du Pont de Nemours and Co., Wilmington 98, Del. The pigment, which is chemically hydrated ferric oxide and is characterized by an extremely small particle size, is claimed to provide unusual resistance to light for a wide range of products.

According to the manufacturer, Du Pont Auric Brown Pigment is non-bleeding in the usual paint, enamel, and lacquer finishes and provides new shades for industrial enamels and trim paints, with minimum tendency to chalk from outdoor exposure.

## Kidde Carbon Dioxide Hose Reel

For protection against semi-fixed fire hazards, Walter Kidde & Co., Inc., Belleville, N. J., has brought out a carbon dioxide hose reel. The unit includes a special nozzle, handle, and shut-off valve, as well as an ample supply of hose, for fighting flammable liquid and electrical fires.



Kidde Carbon Dioxide Hose Reel

Particularly useful in restricted areas, the Kidde Carbon Dioxide Hose Reel can be used with one or more cylinders of carbon dioxide stored as a liquid under 850 lb. pressure per square inch. In multi-cylinder applications, each cylinder may be used singly or all cylinders released simultaneously. Local or remote release mechanisms are available.

The reel is designed to accommodate up to 100 feet of ½-inch hose. The supply pipe for the hose reel is normally located on the left side. If installation details

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**Quick, penetrating heat of Nalco Infra-Red Lamps is easily controlled. Can be used on large or small jobs with speed and efficiency. Write for "Drying Problems Made Easy."**

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**1030 Tyler St. St. Louis 6, Mo.**



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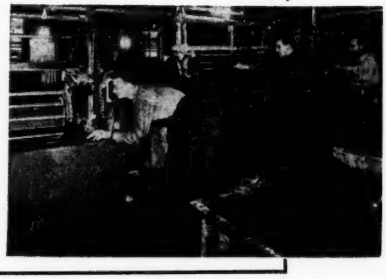
PERMAG cleans quickly—efficiently—economically. When you have, what seems like, an unsolvable metal cleaning problem call on our TECHNICAL SERVICE. We can help you.

**MAGNUSON PRODUCTS CORPORATION**
**Main Office: 50 Court St., Brooklyn, N. Y.**
In Canada: Canadian Permag Products, Ltd.,
Montreal - - - - Toronto

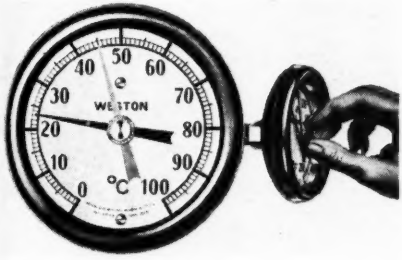


require, the reel can be easily changed to locate the supply pipe on the right side, with the hose still unwinding from the back of the reel. A brake is said to prevent unreeling of more hose than is required.

---

## Weston "Max-Min" All-Metal Thermometer

Known as the "Max-Min," an all-metal thermometer which indicates the maximum or minimum temperatures reached has been introduced by the Weston Electrical Instrument Corp., Newark, N. J. Similar in other respects to the standard Weston all-metal thermometer, the Max-Min has an auxiliary red index which is manually set by a finger knob that protrudes from the center of the scale glass.




Weston "Max-Min" All-Metal Thermometer

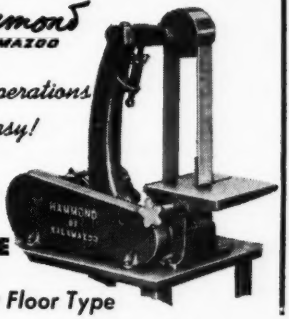
When a record of the lowest temperature reached is desired, this index is placed to the low side of the temperature pointed. The pointer moves the index to the lowest temperature reached during any operating period, and the index remains at that low point until manually reset. For a record of the highest temperature reached, the index is simply set at the high side of the pointer.

Carrying the same accuracy guarantee as the standard Weston thermometers, the Max-Min is available in two models; namely, 221M and 222M, with scale diameters of 3 to 5 inches respectively. It is also available in all the usual Weston ranges, and in stem lengths from 2½ to 48 inches.

The Weston Max-Min Thermometer is claimed to be particularly useful in providing an accurate record of high or low temperatures in transformers, sterilizers, ovens, chemical equipment, and so on, as well as in many processing operations throughout industry.


Hammond of KALAMAZOO

"101" Operations Made Easy!



Model F-2 FLEXIBLE BELT Bench or Floor Type

Grinding, Polishing, Deburring, Chamfering on irregular or regular shaped parts, also eliminate costly hand filing operations!

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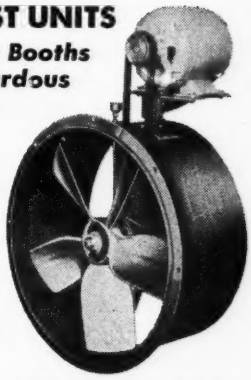

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Also Manufacturers of a complete line of waterwash and dry type paint spray booths with accessories. Send for details.

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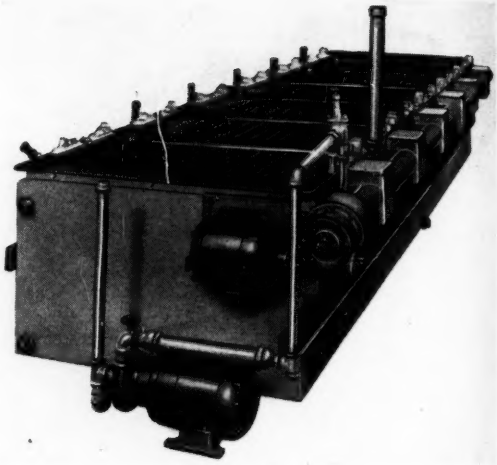
Mercil Multiple-Cylinder Plating Unit with Pumping Feature

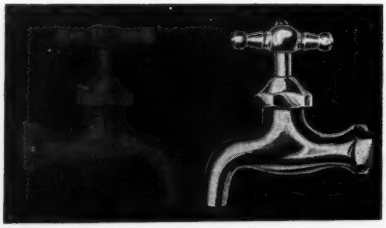


## Mercil Plating Barrel with Pumping Apparatus

Designated as the Mercil, a plating barrel with pumping apparatus has been developed by the Hanson-Van Winkle-Munning Co., Matawan, N. J. According to the manufacturer, in working with cyanide solutions, the amount of cyanide consumed is cut down and the carbonates in the bottom of the tank are reduced in volume using the equipment. The solution is agitated by the pump and an unusually fine grade of plating work is said to be obtained.

Where cyanide solutions are involved, the Mercil Plating Barrel is furnished with an iron pump, whereas in acid solutions, such as nickel, a Duriron pump is specified. The pump capacity is from 25 to 100 gallons per minute, depending upon the size of the installation.

When the pumping unit is in operation, the solution is drawn off from the tank through a perforated pipe near the bot-

**LUSTREBRIGHT**

***Bright Nickel Process***

***Produces Brilliant Adherent Nickel Deposits. Ideal Base for Chromium.***

No color buffing • No re-cleaning • No re-racking • No special solutions. Merely add to cold nickel solution, still or mechanical • No extra equipment.

***Guaranteed not to harm Nickel Solutions***

Illustration shows unbuffed deposits before and after Lustrebright.

*Write for complete information.*

**W. C. BRATE COMPANY**

Established 1860

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**HARRISON 4-A PRODUCTS**

**STAINLESS STEEL POLISHING COMPOUNDS**

***Quality and Uniformity Our Policy at All Times***

Send for samples of our compounds for Cutting, Cut and Color or Mirror Finishing.

WRITE US ABOUT YOUR SPECIAL PROBLEMS.
WE HAVE COMPOUNDS TO MEET ALL YOUR NEEDS.

**HARRISON & CO.**

**Haverhill, Mass.**

***Polishing Compounds 4-A Cement and Thinner***

tom and is pumped back into the tank through a pipe running the full length of the unit and situated directly under the overflow, thus allowing the solution to be pumped directly into the inside of the cylinder.

## Watson-Standard Rx Aluminum System

The Watson-Standard Co., Pittsburgh 12, Pa., announces a series of protective coatings, known as Rx Aluminium System, as an alternate for white base and finish coatings during their present scarcity. The coatings are adaptable to various baking cycles and allow for the production of smooth base and bright product finishes having eye appeal and durability.

Rx Aluminum System for black plate is said to be of definite interest to lithographers, container manufacturers, and metal fabricators because of the excellent printing surface on the base coat and the attractiveness of the finish coat. Reflector, stove and heater manufacturers will find the heat-resistant Rx Aluminum suitable for use at elevated temperatures, while toy, drum, and pail manufacturers will obtain smooth, tough, brilliant coatings formulated to withstand abrasion and severe handling, the manufacturer claims.

## "Murac" Acid Cleaning Compound

"Murac," a fast-acting, safe, inhibited acid-type cleaner, scale remover, and pickling bath concentrate, is now being marketed by The Cowles Detergent Co., Metal Cleaning Dept., 7016 Euclid Ave., Cleveland 3, Ohio. Economical, the compound can be used directly from carboy or diluted as much as one part Murac to four or more parts of water .

According to the manufacturer, Murac Acid Cleaning Compound has a highly selective action on scale and does not attack the base metal noticeably. It is said to be consumed only in removing scale and rust and not in pickling action on the metal surface. Moreover, Murac improves working conditions since acid fuming is controlled, the manufacturer states.


PLASTEX
(Trade Mark Reg.)
COLOR COAT
A BEAUTIFUL PROTECTIVE FINISH
For ALUMINUM, MAGNESIUM
ZINC, BRASS, STEEL

- Adheres To Any Surface
- TOUGH and FLEXIBLE
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WHY RISK MAKESHIFT PROTECTION?

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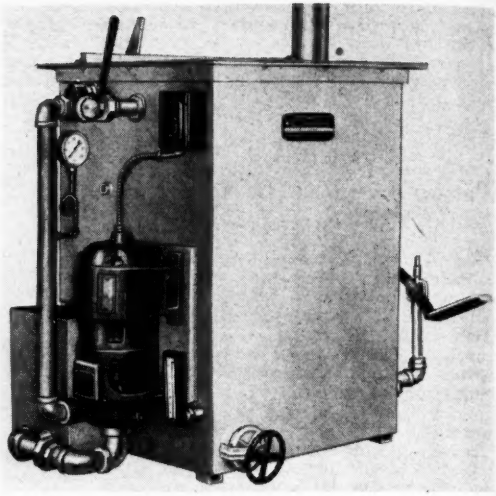
*Send today for samples and Bulletin.*

PRECISION PAPER TUBE COMPANY
2053 W. Charleston St., Chicago 47, Ill.

Optimus Spray Type Washer



## Optimus Spray Type Washer

A spray type washing machine for the thorough washing of parts on racks has been announced by the Optimus Equipment Co., 133 Church St., Matawan, N. J. The machine can be placed directly on the floor, no pit or cement work being necessary. The top of the unit is at working height, and all connections are readily accessible. A lever-operated valve facilitates starting of the spray. Spray nozzles are adjustable and replaceable.

The Optimus Spray Type Washer can be used individually or in series where the washing operation requires several steps, such as solvent wash, rinse, alkali wash, and second rinse. In addition, the machine can be used with submerged agitation to remove caked greases, such as tripoli compound, and abrasives.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OVEN COMPANY MINNEAPOLIS 14 MINNESOTA

**FINISH BAKING OVENS AND FINISHING SYSTEMS**

Compact, ultra-modern equipment engineered and installed by specialists in finishing! All types and sizes of ovens; small batch units to latest mechanized models.

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SPRAY BOOTHS — CONVEYORS

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Minneapolis 14, Minn.


## Eclipse Junior Model 46 Spray Gun

Designated as the Eclipse Junor Model 46, a low pressure spray gun designed for light products-finishing operations and for use where a limited volume and pressure of air are available has been announced by the Eclipse Air Brush Co., 424 Park Ave., Newark 7, New Jersey.

Light in weight, the gun is said to have a very low air consumption and can be used with both internal and external


**GOLD PLATING SOLUTIONS**
*In All Colors*
Guaranteed 100% Pure Gold Content
Troy Weight - Color Constant
Tarnish Resistant
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**Davis-K-Products Co.**
114 Lexington Ave., New York 16, N. Y.
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2-5816

Eclipse Junior Model 46 Spray Gun

types of nozzles. Both fluid and air connections are standard ¼-inch pipe. The spray pattern with an external nozzle can be controlled from a cone to a fan by simply adjusting an air valve on the back of the gun.

## "Ferrex" Hot Tank Cleaner

A non-inflammable hot tank cleaner that is said to effectively remove carbon and paint, as well as grime, grease, gums, heat hardened resins, and heavy dirt, from steel and other ferrous metals without the necessity for scraping or other manual methods is now being marketed under the name of "Ferrex" by Turco Products, Inc., 6135 S. Central Ave., Los Angeles, Calif. The excellent carbon and paint stripping qualities of the product are claimed to result from a combination of two cleaning agents; namely, Ferrex B, an alkaline solid, and Ferrex C, a direct-action liquid solvent.

Specifically designed for use on steel, cast iron, bronze, copper, and red brass (on all but the reactive metals), Ferrex utilizes a water solution and a simple hot tank, perferably with air agitation, to penetrate and "wet out" carbon smut and lead deposits, emulsify petroleum residues, and saponify animal and vegetable oils. According to the manufacturer, Ferrex requires only the use of an ordinary steel hot tank, with an air agitation installation being optional. As the result of its high "buffer index," the solution can be used over and over again with little depletion of strength, it is claimed. Moreover, since Ferrex con-

McKeon's
Liquid Sulphur
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No etch
No dangerous fumes
No trouble
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Guaranteed
Answers Free.
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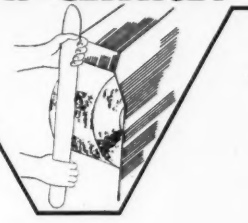
CEMENT
WITH SERVICE!



Ask for a demonstration by
our distributor in your locality
Allied Industrial Products Co. - - - - - Chicago, Illinois
Chas. F. L'Hommedieu & Sons Co. - - - Chicago, Illinois
Chas. F. L'Hommedieu & Sons Co. - Los Angeles, California
Canadian Hanson & VanWinkle Co., Toronto, Ontario, Canada
Lea Manufacturing Co. - - - - - Waterbury, Connecticut
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Abrasive Tool & Supply Co. - - - - - Cleveland, Ohio
INDUSTRIAL LUBRICANTS CO., INC.
5736 TWELFTH ST DETROIT 8, MICH.

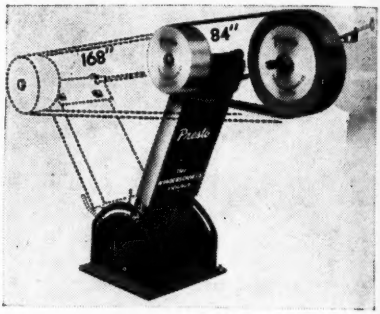
tains no inert ingredients, wastage is said to be eliminated through the use of every particle of the cleaner.

Ferrex is recommended as a fast, safe, economical and effective chemical agent for hot cleaning operations not only in automotive motor reconditioning, but in cleaning pertoleum, railroad, Diesel, and farm equipment and tools as well.

## "Presto" Backstand Idler

Quick change to any belt length is provided by the "Presto" Backstand Idler announced by The Manderscheid Co., 810 Fulton St., Chicago 7, Illinois.

According to the manufacturer, the backstand idler can be adjusted for any belt length from 84 to 168 inches in 30 seconds or less. The unit is all-steel construction with double-sealed ball bearings. Leaf type springs afford adjustable tension, and snubber action is said to eliminate vibration so that belts operate smoothly. The aluminum pulley is accurately balanced and can be easily changed from right to left-hand operation.




"Presto" Backstand Idler

**"Taylor Temperature Control in Electroplating."** Designed to be of maximum usefulness to metal finishers is a 16-page bulletin issued by the Taylor Instrument Companies, Rochester, N. Y., covering the application of automatic instruments to electroplating and cleaning operations. Of special interest is a tabulation of processes (in the case of cleaning) and metals (in the case of plating) properly related to solutions; recommended bath temperature limits; recommended thermal system materials and construction for various plating solutions; and control system most adaptable to each process or metal.

Diagrammatic sketches are used liberally to illustrate instrument hookups for both the heating and cooling of plating baths, for solvent degreaser temperature control, heating and cooling with bath circulation, and electric heating element control. Another section of the bulletin is devoted to various types of thermometers and other accessories widely used in plating processes.

Copy of Bulletin 98166 is available free

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to individuals addressing requests on their company letterheads.

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**Abrasives and Grinding Wheels.** A 108-page handbook on abrasive and grinding wheels has been published by the Norton Co., Worcester 6, Mass. The contents of the book are divided into four parts as follows: Part I—abrasives and grinding wheels; Part II—constant, variable and influential factors, grinding examples, reference tables, handling, storage and inspection, general operating rules, grinding hints; Part III—diamond wheels; Part IV—available printed matter and definitions; Part V—grinding wheel recommendation and selection table. Copy of handbook free to mechanical executives upon request.

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**Amercoat Coating Comparison Chart.** An eight-page technical bulletin providing factual information in condensed form on the entire Amercoat line of protective coatings is now being distributed by the Amercoat Division, American Pipe & Construction Co., P. O. Box 3428, Terminal Annex, Los Angeles 54, Calif. Charts show all characteristics and properties of Amercoat plastic coatings and serve as a ready guide for selecting the proper coating, preparation of the surface, and application methods on steel, concrete, and other materials. In addition, costs per square foot for materials, with area formulas, are provided. Copy of bulletin free upon request .

---

**"Production and Maintenance Cleaning"** is the title of a handbook published by the Phillips Chemical Co., 3400-38 Touhy Ave., Chicago 45, Ill., containing complete information on proper methods and compounds for use in every type of production-line cleaning as well as maintenance cleaning. Included are recommedations for alkali cleaners, electrolytic cleaners, emulsion cleaners, paint and enamel removers, rust removers, carbon removers, bright dips, and burn-off and vapor-solvent degreasing. In addition, proper compounds and dilutions are discussed for every type of maintenance cleaning, such as hand soap, floor cleaner, steam cleaner, carbon remover, rust remover, drain cleaner, and many other products with special applications.

Copy of the pocket-size handbook is available free to executives addressing requests on their company letterheads.


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EITHER BENCH OR FLOOR TYPE

No. 5 BELT GRINDER-POLISHER

For Low Cost, Hi-Production Grinding, Polishing, Buffing, Deburring and Brushing. Write for Bulletin.

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*A heavy cast anode for chromium plating that provides:*

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METALLURGICAL PRODUCTS CO.

35TH AND MOORE STREETS
PHILADELPHIA 45, PA.

Established 1909

*Manufacturers of Copper-Brass-Lead Anodes*

*The Finishing Touch* — **By J. A. Patterson**

***"Sure he's good, dope—But what makes you think he'd know anything about operating this tumbling machine?"***

**Grinding Wheel Data Book.** The Simonds Abrasive Co., Tacony and Fraley Sts., Philadelphia 37, Pa., announces a new and revised edition of its Grinding Wheel Data Book. The 127-page pocket-size book contains a wealth of up-to-date information on grinding wheels and grinding practices. In addition, it includes a wheel specification table covering many recommended specifications for grinding a wide variety of materials.

Of particular use to purchasing agents, shopmen, and all specifiers and users of grinding wheels and other abrasive products, the book is available free by requesting Form ESA 52-6 from the Advertising Department of the above mentioned company.

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**The Industrial Republic.** By P. W. Litchfield. Distributed by Goodyear Tire and Rubber Co., 1144 E. Market St., Akron, Ohio. 224 pages. Illustrated by Fred Ludekens. Cloth binding, board covers. Price, $4.00.

In this book, the author declares that America's labor problem will be solved satisfactorily only when the three branches of the nation's industrial economy—Labor, Capital and Consumer—are brought into balance and harmony. He points to the Constitutional balances established for the Legislative, Judicial and Administrative arms of our form of government as the pattern which should be followed.

The book, which is supplementally titled "Reflections of an Industrial Lieutenant," presents the views the author has gained through a half century of industrial experience. Its arrangement is somewhat unusual in that the first of its four sections is a reprint of a book on the same subject which the author wrote in 1919 at the conclusion of World War I. In the second section of the book, Mr. Litchfield reviews the record of The Goodyear Industrial Assembly—an employee representation plan which has operated for almost two succeeding decades—analyzing its strengths and its weaknesses in the light of experience.

The impact of modern unionism on the Goodyear Company is reviewed in the third section which discusses the methods and results of the violent period which began with the Goodyear strike in 1936. In the fourth and concluding section, the book discusses wages, profits, taxes, government controls, and the methods of communistic and fascistic dictatorships, and offers the outline of a plan for American production—industrial democracy.


## *Opportunity Section*

### WANTED

Plating Supervisor. Must be familiar with Copper, Nickel, Chrome and bright zinc plating. Steady employment. North central location. Write giving full particulars, age, experience, and salary expected. Write Box 102 Products Finishing, 431 Main Street, Cincinnati 2, Ohio.

### TECHNICAL SALES

Excellent opportunity to take over territory for leading manufacturer of industrial chemical specialties. Must have adequate technical background and successful sales record. Salary, expenses, commission. Write Box 105, PRODUCTS FINISHING, 431 Main St., Cincinnati 2, Ohio.

### WANTED: SPRAY PAINTING AND DRYING EQUIPMENT

Complete cleaning, spraying and drying oven consisting of washing, rinse, bonderizing, chromate and drying equipment. Two spray booths 10'0" lg. Convection Oven 340° F. to 350° F. Complete with overhead conveyor. Oven and conveyor suitable for one hour bake at 7 feet per minute. Reply Box No. 107, PRODUCTS FINISHING, 431 Main Street, Cincinnati 2, Ohio.

### Production Finishes Salesman

Unusual opportunity for man who is thoroughly experienced in the sale of Lacquers, Stains, Fillers, Synthetics, etc., to represent a manufacturer of quality products—long established.

Must have the ability to demonstrate and produce volume business.

Sales Managership of Production Finishes Division open to man qualifying. Salary, Expenses and Bonuses.

Reply in confidence giving age, education and experience, write Box 104, PRODUCTS FINISHING, 431 Main Street, Cincinnati 2, Ohio.

# CATALOGS

## FOR YOUR LIBRARY

*To obtain copies of the catalogs listed here, indicate on the coupon the number of the item in which you are interested and mail as directed.*

**1. Cleaning and Finishing**

A 48-page book which contains complete information on the design and applications of Howard metal cleaning and finishing machinery has been prepared by the Howard Engineering and Manufacturing Co., 2289 Buck St., Cincinnati 14, Ohio.

**2. Polishing Machine**

An illustrated folder on a centerless feed polishing machine especially designed for high speed tube and rod polishing has been published by the Production Machine Co., Greenfield, Mass.

**3. Infra-Red Ovens**

**Prefabricated infra-red ovens are the subject of Bulletin No. 500 now being distributed by The Trumbull Electric Manufacturing Co., Plainville, Connecticut.**

**4. Temperature Controls**

**Special self-operated temperature controls for degreasing and cleaning machines are the subject of Bulletin 650 available from the Sarco Co., Inc., 475 Fifth Ave., New York 17, New York.**

**5. Backstands**

The Behr-Manning Corp., Troy, N. Y., has prepared a factual report covering seven production case studies involving the conversion of grinding and finishing methods from shop-coated set-up wheels to factory-coated abrasive belts through the use of idler backstands and cushioned work wheels.

**6. Metal Degreasing**

**The Solvents Division of the Electrochemicals Dept. of E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del., has prepared a 10-page booklet of standard practices for degreasing metals or other non-porous materials with chlorinated solvents.**

**7. Metal Preparation**

Literature on a line of "Prep" products for cleaning and preparing metal for paint is now being offered by the Neilson Chemical Co., 6564 Benson St., Detroit 7, Michigan.

**8. Metal Cleaners**

The Apothecaries Hall Co., Waterbury 88, Conn., has prepared an eight-page booklet which provides a broad picture of methods and materials for the cleaning of various types of metal parts.

**9. Rack Coating**

A bulletin on an air-dry rack coating designed to meet all requirements of every plating cycle is available from the Michigan Chrome & Chemical Co., 6340 E. Jefferson Ave., Detroit 7, Michigan.

**10. Corrosion-Resistant Masonry**

The U. S. Stoneware Co., Akron, Ohio, has prepared a 52-page bulletin containing complete information on acidproof masonry construction for tanks, towers, sumps, floors, and so on.